The Dissertation Committee for Jennifer March Augustine certifies that this is the approved version of the following dissertation:

Maternal Education, Children's Early Achievement Trajectories, and the Intergenerational Transmission of Advantage

Committee:

Robert Crosnoe, Supervisor

Shannon Cavanagh

Aletha Huston

John Mirowsky

Cynthia Osborne

R. Kelly Raley

Maternal Education, Children's Early Achievement Trajectories, and the Intergenerational Transmission of Advantage

by

Jennifer March Augustine, B.A., M.A.

Dissertation

Presented to the Faculty of the Graduate School of
The University of Texas at Austin
in Partial Fulfillment
of the Requirements
for the Degree of

Doctor of Philosophy

The University of Texas at Austin
August 2011

Dedication

I dedicate this dissertation to my loving husband, my supportive parents, my wonderful in-laws, and my ever-loyal four-legged friends.

Acknowledgements

I would like to acknowledge the members of my dissertation committee: Shannon Cavanagh, Robert Crosnoe, Aletha Huston, John Mirowsky, Cynthia Osborne, and Kelly Raley. Thank you for sharing your expertise, and generously offering your time and guidance. I am incredibly fortunate to have had the opportunity to know and work with such wonderful scholars and individuals while at the University of Texas at Austin. You each played a tremendous role in my academic development, and without your support, the completion of this dissertation would not have been possible. I owe an extra debt of gratitude to Rob Crosnoe, my advisor and dissertation chair. I cannot thank you enough for all you have done for me.

Maternal Education, Children's Early Achievement Trajectories, and the Intergenerational Transmission of Advantage

Publication No._____

Jennifer March Augustine, Ph.D.
The University of Texas at Austin, 2011

Supervisor: Robert Crosnoe

Broadly, this dissertation study is an investigation of how mothers' educational histories shape their parenting philosophies and behaviors and, through these intergenerational relationships, their children's achievement during the transition to elementary school. Such an investigation is motivated by the life course paradigm as well as social capital theory and developmental research linking mothers' and children's educational trajectories through various parenting behaviors and strategies. Expanding upon this research base and the above stated research aim, the concept of diverging destinies highlights the importance of considering a specific set of life course pathways that are closely related to mothers' educational attainment and their children's achievement: employment and marriage. Thus, integrating mother's employment and marriage into this dissertation study's conceptual and analytic model, a second aim is to investigate how mothers' education shapes the significance of women's work and marital

histories for their parenting and children's academic trajectories. Findings from this dissertation provide support for the assertion that mothers' and children's academic pathways are linked through parenting. Findings also yield evidence for how mothers' education augments the impact of marriage and employment on parenting and children's achievement. Answering these questions has significance for sociological theory on the intergenerational transmission of advantage.

Table of Contents

List of Tables

List of Figures and Graphs

CHAPTER ONE:

Introduction

Throughout the past several decades, rates of American women's collegiate and post-collegiate educational attainment have steadily increased. In fact, the historical gender gap in educational attainment has not only narrowed, but reversed, as women today earn the majority of all bachelor's and master's level-degrees (Buchmann and DiPrete 2006; Nevill and Chen 2007). This trend in women's educational attainment presents new challenges to understanding how status is transmitted across generations, which traditionally, was considered to flow from fathers' human capital to children's (Blau and Duncan 1967; Featherman and Hauser 1978). Of course, current scholarship on the intergenerational transmission of status recognizes that mothers' education and human capital are passed on to children as well (Carniero, Meghir, and Parey 2007; Neiss and Rowe 2000; Oreopolous, Page, and Stevens 2004). Much of this literature, however, focuses on the labor market opportunities, earnings, and occupational prestige that accrue through women's education and how such resources help mothers promote their children's successful passage through the educational system and status attainment as adults (Duncan et al. 1998; Kalmijn 1994; Mayer 1997).

Flowing from my past work (e.g., Augustine, Cavanagh, and Crosnoe 2009; Augustine and Crosnoe 2010), this dissertation aims to expand upon such traditional

social class perspectives on the intergenerational transmission of advantage by considering the non-economic returns to mothers' educational attainment, and what these resources mean for children's early schooling. This perspective is broadly motivated by a significant body of research employing advanced statistical methods teasing out unobserved sources of endogeneity that provide robust evidence for the link between mothers' and children's human capital characteristics, even when employment characteristics and earnings are held constant (Carneiro, Meghir, and Parey 2007; Oreopolous, Page, and Stevens 2004; Sacerdote 2004). Such research underscores the importance of thinking beyond the economic/labor market resources associated with education by bringing in a consideration of psychosocial resources. Such resources, as medical sociology has suggested about the education gradient in health, influence individual behavior, and more specific to this dissertation study, the parenting behaviors that promote children's status attainment (Mirowsky and Ross 2003; Schinttker 2004).

Thus, the starting point for this dissertation is the theoretically motivated argument that education cultivates social and psychological capacities, enhances knowledge and skills, and shapes values and standards of success (Kingtson et al. 2004; Mirowsky and Ross 2003) that affect how mothers manage their children's education to give them a competitive edge in school and promote their children's status attainment (Lareau 2004). The specific parenting mechanisms under investigation are those linked to children's learning (e.g., complex language use, school involvement, use of enriching activities), as highlighted by an interdisciplinary literature, including social and cultural capital frameworks in sociology (Coleman 1988), investment perspectives in economics

(Foster 2002), and family process and systems perspectives in developmental psychology (McLoyd 1998). The conceptual (and analytic) model that weaves together these different theoretical and empirical strands proposes that maternal education (at 1 month) influences parenting (measured immediately before school entry at 54 months/kindergarten and at first grade), which in turn shapes children's early achievement trajectories as they move into and through school (first to fifth grades). This conceptual model is guided by the life course perspective, which offers an integrative approach to examining the connections among the different pieces of this model (Elder 1998). Providing empirical support for this baseline model is the first aim of this dissertation study.

This dissertation study goes one step further to develop this conceptual model by also exploring the question of how mothers' education and the various other institutional pathways to which higher education is inextricably linked (e.g., marital status, employment) *combine* to shape children's status attainment trajectories and the mechanisms that promote them. The life course perspective also plays an important role in developing this question by offering a general framework for considering variability in these linkages across subsets of the American population defined by other major demographic trends among women (Elder 1998). Yet more specifically, this question is also inspired by Sara McLanahan's (2004) notion of "diverging destinies," which articulates how many of the particular demographic phenomena that promote parental resources and children's successful development 1) hinge on women's education and have, in modernized societies, 2) grown more intimately connected. Thus, the notion of

diverging destinies suggests that the role of mothers' education in children's status attainment, and in the intergenerational transmission of advantage, cannot be understood apart from the other demographic processes to which education is linked. In this spirit, this dissertation focuses on two demographic (and life course) pathways that are explicitly highlighted by the diverging destinies concept: women's marital and employment experiences.

Connecting this concept and the focus on women's marriage and employment to the first study aim, the following questions represent the second and third study aims:

1. How does maternal education augment the significance of marriage and marital stability for mothers' parenting and children's early achievement trajectories?
2. How does maternal education modify the significance of mothers' employment for her parenting and her children's early achievement trajectories?

In analyzing these questions, the baseline model described above will be expanded to include measures of mother's marital/relationship statuses and maternal employment and modeled as interactions with maternal education. In establishing explicit hypotheses about the nature of these analytic relationships, cumulative advantage and resource substitution perspectives will inform a number of different (and sometimes competing) possibilities. Investigation of this intergenerational phenomenon will draw on data from NICHD Study of Early Child Care and Youth Development (SECCYD), a national birth cohort study of children and mothers that offers rich detail on women's marital histories, employment experiences, and on the parenting mechanisms that convey advantages from mothers to children. Focusing on such mechanisms during a key developmental stage

when the skills that definite children's later academic careers first take root (Cunha and Heckman 2006, 2007; NICHD ECCRN 2005)—the transition into formal schooling—the results from this study will illuminate one facet of the complex process through which children's destinies begin to diverge and help refine conceptual understanding of the intergenerational nature of inequality.

CHAPTER TWO:

Conceptual Model and Review of Literature

This chapter will review the empirical and theoretical work that motivates the dissertation's core conceptual model. I begin by describing recent trends in women's educational attainment and the relevance of these trends for understanding the processes that transfer socioeconomic advantage from one generation to the next. In this effort, I draw on studies that suggest a causal connection between mothers' educational attainment and child academic outcomes and engage developmental research and cultural/social capital perspectives to highlight how parental investment strategies form this connection. At the same time, I also acknowledge other factors that may connect mothers and children's educational pathways (e.g., income, assortative mating, genetic cognitive endowments, personality traits). Bringing these ideas together, I then lay out the dissertation's core conceptual model and explain how the life course perspective and the concept of diverging destinies can help identify questions that remain unanswered about the basic linkages among maternal education, parenting, and children's learning. These questions will be addressed by the aims outlined in the previous chapter. Finally, this chapter closes with a review of the existing literature relevant to final two research aims and, for each aim, a description of specific hypotheses to be tested empirically.

Laying the Context

Throughout the past several decades, rates of American women's collegiate and post-collegiate educational attainment have steadily increased. In 1970, only 8 percent of women aged 25-29 held bachelor's degrees. By 2007, however, the proportion of women aged 25-29 with bachelor's degrees had climbed to 28 percent (Snyder, Dillow, and Hoffman 2006). Although during this time men's educational attainment also rose, rates of educational attainment grew even faster for women, causing the historical gender gap in educational attainment to not only narrow but reverse (Buchmann and DiPrete 2006). Indeed, by 2001, the percentage of bachelor's degrees conferred to women was 57 percent, compared to 1970, when women earned only 43 percent of all bachelor's degrees (Freeman 2005). Moreover, among those who had obtained a bachelor's degree, women have also become more likely than men to earn a master's degree (e.g., 49 percent versus 44 in 2003) (Nevill and Chen 2007).

These statistics are important because the intergenerational transmission of advantage has long been considered to flow through parental education (Blau and Duncan 1967; Featherman and Hauser 1978; Carniero, Meghir, and Parey 2007). Thus, the rise in women's educational advantage suggests that socioeconomic status is now no longer channeled principally through fathers. Mothers' status is transmitted also (Beller 2009). This dissertation aims to highlight the role of mothers in this intergenerational process, thereby broadening conceptual understanding of how status is transferred between generations. In doing so, I acknowledge from the onset the clear issues of endogeneity

that make causal conclusions about this intergenerational transmission difficult and, therefore, begin by describing past research addressing these issues.

Correlations between mothers' educational attainment and various indicators of children's education (e.g., test scores, cognitive development, attainment) are among the most consistent findings in social science research (Haveman and Wolfe 1995; Sirin 2002). Nonetheless, causal inferences based on these correlational studies remain limited because of issues of selection bias and the inability to control for unobserved or unidentified confounds. Recently, however, researchers— primarily from economics and developmental psychology—have taken substantial steps toward determining whether there is at least some causal connection between mothers' and children's educational pathways. These studies use quasi-experimental (e.g., adoption and sibling studies) and instrumental variable approaches that tease out the role of such confounds, in particular, genetic cognitive traits, income, assortative mating, and endogenous environmental and individual factors that promote both mothers and children's educational attainment (e.g., personality traits that help mothers succeed in school and provide academic enrichments to their children).

Such causally informed investigations have yielded evidence of the robust effects of mothers' educational attainment on their children's performance in school and probability of graduating from high school and college (Carniero et al. 2007; Neiss and Rowe 2000). For example, Rosenzweig and Wolpin (1994) compared test scores of siblings whose mothers increased their education between births and found that each additional year of education improved children's reading and math scores by 2.4 percent.

Sacerdote (2004), using adoption data, found that increases in maternal education raised an adoptee's probability of graduating from college by 7 percent. Using instrumental variable approaches, Oreopolous, Page, and Stevens (2004) and Gennetian, Magnuson, and Morris (2008) both reported positive effects of mothers' education on children's achievement. The former exploited historical changes in compulsory schooling laws, and the latter leveraged data from a random assignment experiment.

The findings from these studies are not unequivocal (see Black, Devereux, and Salvanes 2003 or Behrman and Rosensweig 2002), nor without limitations (for example, using changes in compulsory school laws as an instrument may be capturing the effect of education for mothers at the low end of the socioeconomic distribution). Nonetheless, they provide strong support for the underlying premise of this dissertation that there is a causal component connecting mothers' and children's education. Thus, this dissertation will take steps to account for factors that have been repeatedly shown to be associated with both mother's and children's educational pathways and could potentially inflate estimates of this linkage if not controlled (Carniero, Meghir, and Parey 2007). At the same time, it will also consider other explanations for why mothers' educational attainment conveys advantages to children. These explanations center on the many non-economic, non-cognitive returns to maternal education (e.g., socialization of mothers' beliefs surrounding education, knowledge of how the education system works) that help mothers manage their children's successful passage through the educational system.

Core Conceptual Model of the Dissertation

In general, few studies have investigated how the non-economic or non-cognitive returns to maternal education may contribute to socioeconomic differences in children's academic pathways. Instead, studies have typically focused on the economic returns (e.g., income, occupational prestige) to maternal education (Duncan and Brooks-Gunn 1997; Kalmijn 1994), emphasized the transmission of cognitive abilities (Plomin and Petrill 1997), or considered maternal educational attainment to be a marker for socioeconomic status (e.g., values, preferences, and behaviors that reflect cultural differences) or class (e.g., differences in material and social resources) (Entwisle, Alexander, and Olson 2005). Yet, significant theoretical and empirical evidence suggests that education also cultivates social and psychological capacities, enhances skills and knowledge, and shapes values and standards of success that helps mothers promote their children's cognitive development, learning, and academic achievement (Kingtson et al. 2004; Mirowsky and Ross 2003; Oreopoulos and Salvanes 2009). As noted earlier, this social psychological view of how education shapes individual behavior is most commonly applied in the medical sociology and public health literature. Extant research and theory, however, provides insight into how the psychosocial advantages associated with education may also promote the parenting mechanisms that facilitate children's learning.

Non-Economic Returns to Education

In particular, education imbues mothers with knowledge about how the educational system works, providing insights into the activities that support children's learning at home (e.g., reading to children, involvement at school) and the strategies that

enhance children's learning opportunities at school (e.g., parental involvement and advocacy) (Alexander, Entwisle, and Bedinger 1994; Lareau 2003). Education also socializes mothers to adopt particular beliefs and values surrounding education that heighten expectations for their children's future educational achievements and motivate participation in their children's learning and schooling (Davis-Kean 2005; Sayer, Gauthier, and Furstenberg 2004). Finally, education cultivates mothers' literacy skills, which are passed on to children through day-to-day interactions, as well as psychosocial skills—including critical thinking skills, decision-making skills, and effaciousness—that help mothers form relationships with teachers and schools and organize their children's lives in ways that help them achieve their child rearing-goals (Bandura 1986; Bornstein et al. 2003; Kalil, Ryan, and Corey 2011; Mirowsky and Ross 2003; Oreopoulos and Salvanes 2009; Sayer, Gauthier, and Furstenberg 2004).

Importantly, these resources do not only accrue to women at the high end of the educational distribution. Not only do college graduates have measurable advantages in psychosocial skills and resources over women who never completed high school, high school graduates do too. In other words, *any* persistence in the educational system matters (Kingston et al. 2004; Mirowsky and Ross 2003). Thus, I acknowledge how this perspective applies to women with different educational backgrounds, not just those women with the greatest amount of education. This perspective will also play a motivating role in a few key modeling and measurement decisions, which are described in the next chapter.

In sum, the ideas above highlight how education affords mothers a range of personal resources that lead to differences in parenting behaviors targeted toward facilitating children's learning. Guided by this body of research, this dissertation considers how the non-economic, non-cognitive returns to mothers' education link mothers' and children's educational pathways through parenting and contribute to the intergenerational transmission of advantage (Coleman 1988; Lareau 2004; Magnuson 2007). This conceptual linkage is further refined by developmental and social capital perspectives that provide more direct evidence for how maternal education contributes to socioeconomic disparities in children's academic outcomes through parental investments in children's learning.

Developmental and Social Capital Perspectives

A number of theoretical perspectives across disciplines focus on parenting, especially parents' stimulation of and emotional/instrumental support for intellectual development and academic achievement, as a fundamental component of children's educational experiences. Such perspectives include social and cultural capital frameworks in sociology (Coleman 1988), systems perspectives and family process models in developmental psychology (McLoyd 1998), and investment perspectives in economics (Foster 2002). Collectively, the studies grounded in these perspectives have demonstrated that more educated mothers (compared to less educated mothers) are more likely to engage children in stimulating learning environments inside and outside the home (e.g., exposure to books, learning activities, and structured learning opportunities such as lessons), use parent-child communication styles that foster children's problem solving

skills, complex language skills, and independence, be actively involved in schooling (e.g., communication with teachers, course taking decisions) and school-related activities, and hold higher expectations for their children's education (Davis-Kean 2005, Hart and Risley 1995; Hill et al. 2004; Hoff-Ginsberg and Tardiff 1995; Hoover-Dempsey and Sandler 1997, 2005; Kalil, Ryan, and Corey 2011; Kohl, Lengua, and McMahon 2000; Lareau 1989, 2004; Raver, Gershoff, and Aber 2007; Stevenson and Baker 1987; Taylor, Clayton, and Rowley 2004). These parenting behaviors and strategies, in turn, cultivate children's early and later academic development, including their language skills, early academic performance, commitment to learning, and advanced course placement (Bornstein et al. 2003; Dubow, Boxer, and Huesmann 2009; Useem 1992).

An interdisciplinary literature, therefore, clarifies how parental investments in children's learning connect mothers' and children's educational pathways and how maternal education differences in these parental investment behaviors contribute to persistent socioeconomic differences in children's achievement (Phillips, Crouse, and Ralph 1998; Raver et al. 2007). Guided by this body of literature, the specific parenting mechanisms under investigation in this dissertation include: the quality of the *home environment* (e.g., exposure to books, learning activities, and structured learning opportunities like lessons); mothers' *stimulation* of child's cognitive development (e.g., use of parent-child communication styles that foster children's problem solving skills, complex language skills); *maternal sensitivity* (e.g., providing encouragement, positive feedback on tasks), *school involvement* (e.g., communication with teachers); and

expectations reflected in mothers' attitudes about their children's behavior and approach to managing their children's educational careers.

These different constructs represent measures in the SECCYD that map onto the specific parenting behaviors highlighted in the interdisciplinary literature described above. Such maternal education differences in parental investment behaviors and strategies, however, are generally considered independent of one another. Consequently, this dissertation turns to Lareau's concerted cultivation (2004) framework as a way of conceptually connecting these different parental investments in children's learning. Lareau's conceptual framework also motivates the analytic model, which models the different SECCYD parenting measures as indicators of a latent parenting factor. More detail on this parenting factor appears in Chapter 3.

Concerted Cultivation

According to Lareau's framework, middle class parents engage in a cohesive style of parenting (i.e., concerted cultivation) that is characterized by parent-child interactions that cultivate children's verbal and reasoning skills and independence, scheduled activities for children, and parental intervention with schools. This parenting reflects differences in mothers' expectations about parental role behaviors (e.g., parental advocacy versus accepting teachers as responsible for children's academic progress) and values regarding child behaviors (e.g., independent versus respectful) that collectively transfer advantage from mothers to children by: advancing children's early academic development; enhancing their status in schools in an educational system that has historically rewarded such class-based parenting behaviors; and socializing children into

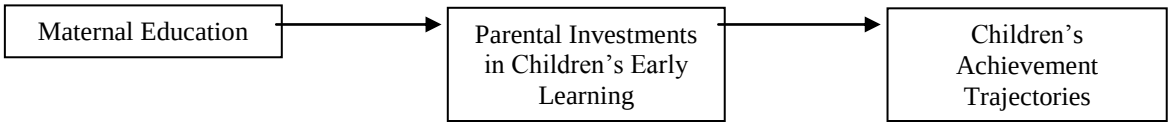
an orientation that prioritizes how schools can serve their individual needs (Baker and Stevenson 1986; Davis-Kean 2005; Hoover-Dempsey and Sandler 1997; Kohn 1977; Okagaki and Sternberg 1993). Thus, concerted cultivation is a theoretically important concept because it ties together different parental investment behaviors into a holistic conception of parenting and articulates the implications of these parenting investments for the intergenerational transmission of advantage through maternal education.

Importantly, this framework, which was based on ethnographic observations and in-depth interviews with a small number of children and families, has also been supported through statistical analyses using large data sets (Cheadle 2008; Bodovski and Farkas 2008). These studies have found that concerted cultivation (measured by various parental investments behaviors such as parents' participation in children's schooling, children's participation in formal activities, and the availability of learning materials) explains a significant portion of socioeconomic differences in children's early achievement scores. Moreover, these differences were due to parent education, not just family income.

At the same time, this framework is not without certain shortcomings. In particular, it presents a parenting typology that does not address the tremendous diversity among families; for example, families headed by more educated single (and perhaps, economically disadvantaged) mothers, or married working class families (indeed, the majority of working class families in Lareau's sample were headed by single parents). Still, what is significant about Lareau's research was how it spotlighted socioeconomic differences in how children are raised and what these differences mean for children's potential to excel in U.S. schools.

This insight informs a key piece of the core conceptual model of this study. This model, depicted below in Figure 2.1, states that maternal education translates into differences in parental investment behaviors that affect children's early achievement as they move into and through formal schooling. In making this assertion, it weaves together developmental and social capital perspectives that elucidate the association between maternal education and parental investment behaviors relevant to children's early learning with Lareau's notion of concerted cultivation, which conceptualizes these parental investment behaviors as pieces of a broader orientation to parenting that represents a key pathway in the intergenerational transmission of advantage. Testing this model is the first aim of the dissertation study. This conceptual model will then anchor the remaining questions that I aim to explore.

Figure 2.1. Core Conceptual Model



Expanded Conceptual Model

Quantitatively estimating the conceptual model in Figure 2.1 is the first aim of the dissertation. It is also the starting point for the other empirical analyses in this dissertation. In order to further develop this model in ways that identify key questions that remain unanswered about this general phenomenon, I will draw on theoretical

insights from life course theory and more direct, substantive insights from Sara McLanahan's notion of "diverging destinies." I will begin by presenting the life course as an orienting theory and overarching motivation for expanding upon the general linkages among maternal education, parenting, and child outcomes, which so often studied in the past subsume a great deal of variability across subsets of the population defined by other major demographic trends among women. I will then discuss how the notion of diverging destinies grounds this model-building exercise in a way that provides a more pointed justification for doing so. Finally, I will return to a discussion of the life course in order to explain this dissertation's focus on children's early (rather than later) achievement and the related the emphasis on parenting during this period.

The Life Course Perspective

The life course perspective offers a valuable lens for exploring unanswered questions regarding the links among maternal education, parenting, and child achievement. First, it views a mother's life course as a set of intertwining institutional, social, psychological, and behavioral pathways. Secondly, the life course principle of linked lives—the idea that family members' trajectories affect and condition each other over time through direct interaction (Elder 1998)—highlights the interplay among mothers' various intertwining life course pathways and their children's trajectories and the parenting mechanisms that weave them together. Thus, one way to understand the linkage between maternal educational attainment—which represents the endpoint of a protracted pathway through the educational system—and their children's achievement is to examine this linkage in relation to women's other pathways. As a starting point, then,

the *second and third aims* of this dissertation are to examine two life course pathways that are closely related to women's educational attainment and children's achievement: women's marital and employment histories (McLanahan 2004).

The focus on these two life course pathways (marriage and employment) is further informed by Sara McLanahan's conceptual idea of "diverging destinies," which she laid out in her presidential address to the Population Association of America (2004). As mentioned in the previous chapter, this specific concept emphasizes how a number of demographic phenomena associated with parental investment and the positive development of children's learning skills have in the U.S. (as well as other modernized societies) become more tightly bundled together (2004). Among these phenomena are women's pursuit of higher education, which in McLanahan's conceptual model, is the fulcrum on which the other demographic processes hinge. As McLanahan points out, the historic rise in women's education has occurred along side greater increases in family income, labor force participation, and age at first birth among women with post-secondary degrees (compared to women with less education), and slower increases in nonmarital childbearing rates and divorce. As such, this study's focus on women's marital and employment histories will better identify how the intersection of maternal life course factors documented by McLanahan shape children's achievement trajectories and, in her words, their diverging destinies.

In studying these maternal life course factors, this study takes a longitudinal approach to studying education, marriage, and employment, which is explicitly guided by the life course focus on how one's intersecting individual pathways represent continuous

process (Bengtson and Allen 1993). Thus, education is represented by mothers' time in the educational system (i.e., years of schooling). Marital histories are defined by *status*, *biological parentage*, and *stability*, and are captured across two distinct domains of child development: the period before children begin school (between birth and 54 months) and the period immediately following the transition into formal schooling (first grade). Employment is captured longitudinally but also, due to the variable nature of mothers' work (particularly for disadvantaged women), contemporaneously (Edin and Lein 1997). Longitudinal employment measures encompass the period between the child's birth and measurement of the parenting variable(s). These include whether the mother was *stably employed*, *ever experienced a higher prestige occupation*, *ever worked a non-standard schedule* (and if so, how frequently), and whether she *worked full-time during the year following the child's birth*. Contemporaneous measures (measured at 54 months and first grade) include mothers' *work status* (not-working, part-time, full-time), *occupational prestige*, and *work schedule* (e.g., non-standard).

Turning to children's developing life course trajectories, the life course principle of timing (i.e., when an experience occurs determines its developmental significance) and its related emphasis on transition points (e.g., as potential deflectors of life course trajectories) suggest that critical periods may exist in the linkage between mothers' and children's educational pathways. Guided by this principle, this study focuses on the transition into elementary school—a period thought to mark a critical stage in the intergenerational transmission of advantage. Specifically, it is during this period when initially small group differences in learning skills quickly compound, setting children on

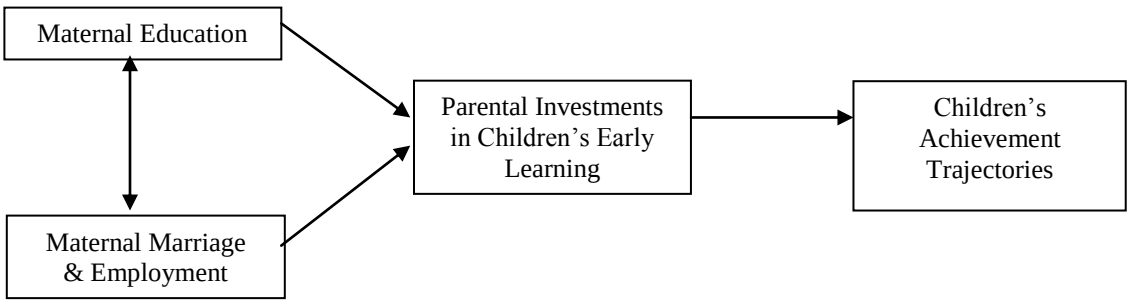
divergent academic trajectories that become increasingly difficult to redirect (Entwisle, Alexander, and Olson 2005; Pianta, Cox, and Snow 2007). Thus, in aiming to understand the divergence of children's destinies, this study focuses on trajectories of children's achievement during elementary school (between first and fifth grade) and the mechanisms that shape children's achievement trajectories during the critical school transition.

Investigation of the mechanisms that comprise the last component of the conceptual model—the actual link binding between mothers' and children's life course pathways—is informed by the life course principle of linked lives, alluded to above (Elder 1998), or the idea that family members' trajectories influence each other over time through interactions and joint integration into shared networks (e.g., family members, teachers). This principle underscores the significance of parenting, which captures how children experience such interactions and family life more broadly (Bornstein and Bradley 2003). In this study, parenting is examined at two time points, which comprise a critical period of influence when children's learning, and trajectories of learning, are most sensitive to parenting inputs (Cunha and Heckman 2006, 2007; NICHD ECCRN 2005). These time points are 1) age 4 ½ and the start of kindergarten and 2) spring of first grade, which capture the periods immediately before and after the start of formal schooling (generally regarded as first grade, when all children are required to be in school full-day) and align with the measurement of family structure mentioned above.

Expanded Conceptual Model of Dissertation

In sum, this dissertation expands upon the general conceptual model outlined earlier by using life course theory and the notion of diverging destinies to identify the specific questions that I will address emperically. In particular, life course theory views the linkages among maternal education, parenting, and child achievement as connected to other aspects of mothers' lives up to and during a critical period of their children's education. The specific aspects of mothers' lives under investigation—employment and marriage—and their linkage to mothers' education, are further emphasized by the notion of diverging destinies. The expanded conceptual model is presented below in Figure 2.2. This model states that the intergenerational transmission of advantage is shaped by the interplay among mothers' education and associated institutional pathways, which intertwine to shape parental investment behaviors and children's early achievement trajectories.

Figure 2.2. Expanded Conceptual Model



Working from this expanded conceptual model, the next step is to lay out the extant literature related to each specific aim and provide hypotheses for each aim that will be tested empirically based on this literature. Yet, before doing so, the complementary concepts of cumulative advantage and resource substitution must be introduced. The reason for introducing these theories is that the existing body of literature does not provide a clear direction for the formulation of explicit hypotheses—or as one example, whether maternal education amplifies the significance of marriage and marital stability for parenting and children's development, or minimizes the significance of marriage for such processes. In addition, the diverging destinies concept is also silent on this matter, and if anything, implies that the co-occurrence of mothers' life course factors have additive (rather than interactive) implications for families and children. Thus, before moving into the literature review, I will first explain the concepts of cumulative advantage and resource substitution and how they inform the different, and oftentimes competing, hypotheses presented in the following section.

Cumulative Advantage and Resource Substitution

The concept of cumulative advantage suggests that individuals or groups who already have resources in one context are better able to capitalize on additional resources in another context. This concept has numerous applications. For example, in the case of individual health, subsets of individuals and demographic groups consistently demonstrate clear and increasing health advantages relative to others as they age (Wilson, Shuey, and Elder 2007). This concept can also be applied to families and child development. As an example from my own work, children of higher educated mothers

begin elementary school with greater school readiness skills, not only as a result of the parenting processes associated with maternal education described earlier, but because this subset of higher educated mothers is also the group most likely to enroll their children in the types of early care settings that promote such school readiness skills (Augustine et al. 2010). As an alternative example from my own work, education was associated with a reduced the likelihood that mothers would experience depression, but it also helped buffer against any disruptions associated with depression (Augustine and Crosnoe 2010). In this dissertation, the cumulative advantage perspective suggests how full-time work might magnify the advantages associated with maternal education.

Turning to resource substitution, this perspective implies that the impact of some protective resource will be more pronounced in social and economic groups that have less access to resources overall. Again, in one of its most common applications, to health outcomes, the resource substitution perspective views education as a resource that makes more of a difference in disadvantaged groups (e.g., poor minorities) by helping them make informed health decisions that substitute for their lack of financial resources or social status (Mirowsky and Ross 2003; Schnittker 2004). This perspective, however, can be reconfigured and applied in other contexts. For example, high quality child care has been shown to provide a greater boost to poor children than more affluent children (NICHD ECCRN 2005; Winsler 2008). In this dissertation, education might substitute for a lack of resources associated with certain family structures and work circumstances.

A more specific description of how the concepts of cumulative advantage and resource substation are applied to the dissertation's conceptual model and related

research aims is provided below, as part of the literature review. Having explained the basis for proposing a number of competing hypothesis (rather than one specific hypothesis), and having defined the theoretical concepts that will help focus these hypotheses, I will now move into a discussion of this literature related to aims 2 and 3.

Literature Review

The following section presents a review of the extant literature related to 1) marriage, family life, and child wellbeing and 2) employment, family life, and child wellbeing. This review of this literature, however, will be presented with an eye toward the conceptual model. As such, emphasis will be placed on the aspects of this literature that speak directly to idea of diverging destinies, the life course view of mothers' marital and employment pathways, and the role that mothers' education might play in these processes.

Mothers' Marital and Relationship Histories

Beginning with the first specific aim, one life course pathway connected to women's educational attainment and children's achievement involves mothers' marital/relationship statuses. Specifically, more educated mothers are more likely to be married to the biological father at the time of a birth and to remain stably married, whereas mothers with less education are more likely to experience cohabitation, nonmarital childbearing, and instability across both marital (i.e., divorce) and nonmarital family structures (Raley and Bumpass 2003; Sweeney and Cancian 2004). Moreover, evidence suggests that these associations have grown stronger over the past several

decades, likely due to the increasing returns to education (financially, health-wise, and in social status) over the past few decades (Isen and Stevenson 2008; Martin 2006). The congruence between maternal education and family structure represent one source of inequality in children's lives because marriage, like education, conveys a number of well-documented advantages that support optimal parenting and benefit the development of children's human capital (Amato 2005). In other words, children of more educated mothers are more likely to experience the added benefits associated with marriage and marital stability.

These benefits have been well documented by family researchers (Brown 2010; Crosnoe and Cavanagh 2010). Turning to this research, scholars have consistently documented a clear developmental advantage (although sometimes modest) among children living in two-biological-parent married households that is not observed among children living in step-parent families or cohabiting families (Amato 2005; Artis 2007; Brown 2004, 2010; Carlson and Corcoran 2001; McLanahan and Sandefur 1994). This pattern points to the significance of both marital status and biological parentage for understanding the mechanisms linked to family structure that promote children's early status attainment.

Among these mechanisms are financial resources, which are often more abundant in married-biological families due to fathers' wages (perhaps as a result of household specialization arising after a marital birth), the pooling of financial resources (which occurs less among cohabiters), and the transfer of wealth that typically flows through marital and biological bonds (Becker 1991; Hao 1996; Oropesa, Landale, and Kenkre

2003; Smock and Gupta 2002). Such financial resources help mothers secure material (e.g., books) and social goods (e.g. enriching child care), which bring about well-documented effects on children's early achievement (NICHD ECCRN 2005). Such financial resources, in turn, also make it less necessary for married mothers to work long hours or non-standard evening or weekend schedules to support their children, and provide mothers more flexibility in monitoring their children's academic progress, interacting with teachers, and participating in stimulating learning activities (e.g. home learning games, trips to the library), all of which have clear implications for children's learning (Entwisle, Alexander, and Olson 1997; Lareau 1987; Raver et al. 2007).

Of course, consistent with the life course perspective, the benefits of marriage among biological parents for children may not simply be financial. Marriage and biological ties also influence the way parents interact with each other. Indeed, children in married-biological families (compared to all other family forms) generally have better outcomes, *net* of family income, while children in step-parent families often experience more discord, despite any associated financial benefit (Amato 1994; Artis 2007; Brown 2004, 2010; Carlson and Corcoran 2001; Hetherington and Jodi 1994).

Thus, this dissertation considers the social and psychological benefits of this particular status, such as companionship, emotional security and support, integration into networks of kin, and regular communication (Brown 2010; O'Connor et al. 1998; Waite and Gallager 2000). These resources undergird how children are raised by facilitating cooperative parenting and engagement; the regular exchange of information regarding ideal childrearing practices and the needs of their children; a division of labor that allows

for increased time investments in children; and decreases in parenting stress that can lead to inconsistent parenting and reductions in the quality of the home environment (Blair and Lichter 1991; Lareau 2004; McLoyd 1998; Sandberg and Hofferth 2001; Shelton and John 1996; Sun 2001). These resources also provide safeguards against distress when hardships do occur (Beck et al. 2010; Cooper et al. 2009; McLoyd 1998), allowing mothers to provide consistent support for their children's learning.

Importantly, these marital benefits do not arise at once, but accrue over time. Thus, not only do status and biological parentage represent important dimensions of marriage, but so does stability (Wu and Martinson 1993). This perspective on stability is important because it takes a dynamic view of family structure that characterizes marriage as a trajectory that begins when children are born and captures different phases of child development (Cavanagh and Huston 2006). It also calls attention to how a family structure change (e.g., divorce, in the case of marriage) can dissolve the social and psychological benefits described above, in addition to any financial loss. For example, a residential move, which often accompanies a family structure change, can weaken community ties to family and friends (Astone and McLanahan 1994; McLanahan and Sandefur 1997). Finally, this perspective emphasizes the stressors (e.g., due to ambiguous family roles) and disruptions (e.g., to household routines and organization) introduced by family structure change that can have enduring consequences for mothers' parenting efforts (Cavanagh and Huston 2006; Cooper, McLanahan, and Brooks-Gunn 2010).

Connecting this literature on family structure instability and change to children's achievement, researchers are just beginning to consider the implications of family

structure instability for children's early achievement outcomes. Nonetheless, studies that examine children's behavioral outcomes find consistent negative associations with family structure instability (Cavanagh and Huston 2008; Osborne and McLanahan 2007), while studies focused on academic outcomes at other stages of children's development have also documented negative effects (Cavanagh, Schiller, and Riegle-Crumb 2006; Magnuson and Berger 2009).

In sum, the studies mentioned above provide a basis for understanding how family structure, like maternal education, affects parenting and children's learning. This understanding, however, considers the benefits of maternal education and marriage for parenting and child learning to be separate, when in fact, education might magnify, or minimize, the significance of family structure for such processes. This is because education engenders its own set of psychosocial advantages, which also promote the parenting mechanisms that facilitate children's learning and which exist above and beyond any benefit associated with labor market outcomes (Attewell and Lavin 2007; Gennetian, Magnuson, and Morris 2008). Thus, such non-economic returns to education might augment the significance of marriage and marital stability for family life. This study, therefore, proposes several hypotheses and in doing so, presents an empirical test of McLanahan's notion of diverging destinies that focuses on the intersection between mothers' marital and educational trajectories.

Aim 2 Hypotheses

The first two hypotheses are competing. They consider how maternal education might amplify the benefits of being stably married to the biological father, or alternately,

minimize them. The former hypothesis draws on a cumulative advantage perspective, which suggests that *the resources that accrue through education might enhance the benefits generally associated with marital stability* (DiPrete and Eirich 2006). For example, more educated women may hold an advantage in the marriage market that allows them to find an ideally matched marital partner and achieve greater marital satisfaction (Oppenheimer 1988; Glenn 1990). The latter hypothesis adopts a resource substitution perspective, which suggests that *the benefits of marriage may overlap with many of the benefits associated with education, and therefore, have a greater impact on women who have less access to resources overall, those with less education* (Mirowksy and Ross 2003). For example, the networks of kin and friends associated with marriage might provide less educated mothers with valuable insights into the advocacy strategies that can yield academic advantages for children at school and in the classroom (Lareau 1989).

The final hypothesis looks at family structure and marital instability and combines both theoretical expectations. *This hypothesis states that family structure instability, which is less common among more educated women (representing one type of cumulative advantage), will also be less disruptive for families headed by more educated mothers (resource substitution)*. This assertion draws on prior research emphasizing the protective benefits of maternal education and how the associated psychosocial returns to schooling can help mothers buffer against circumstances, such as family structure change, that can negatively impact their parenting efforts (Augustine and Crosnoe 2010; Cooper et al. 2009).

Maternal Employment

Turning to the second aim, another life course trend that has co-occurred alongside the rise in women's educational attainment has been women's increased participation in the labor force, particularly among women with young children. For example, between 1975 and 2005, the employment rate for married mothers with preschool aged children increased from 39 percent to 60 percent (after peaking at 65 percent in 1998), and it has risen even higher among single mothers with young children (Cohany and Sok 1998). Importantly, the growth in mothers' labor force participation has been greatest among college educated women (Cohen and Bianchi 1999; Juhn and Murphy 1997). Furthermore, despite the small proportion of highly educated mothers who have begun "opting out' of the labor force for motherhood (Percheski 2008), mothers with college degrees continue to be employed at higher rates than mothers with less education (England, Garcia-Beaulieu, and Ross 2004).

The alignment between maternal education and employment represents an alternative source of inequality in children's lives because employment, like education and marriage, is associated with a variety of advantages that promote mothers' parental investment and children's early achievement (Amato 2005). Unlike marriage and marital stability, however, employment can have negative implications. This seemingly incongruous association between maternal employment, parenting, and child outcomes is due to the fact that the effects of employment on the parenting behaviors that influence children's achievement depend on the qualitative and quantitative dimensions of mothers'

work. Thus, in order to help tease out some of this complexity associated with mothers' employment, this study will go beyond simple measures of labor force participation.

Specifically, this dissertation will also consider aspects of women's work, including part-time/full-time status, occupational prestige, and work schedule (i.e., nonstandard/standard work) (Blau and Grossberg 1992; Parcel and Menaghan 1990; Raver 2003; Vandell and Ramanan 1992; Waldfogel, Han, and Brooks-Gunn 2002). At the same time, consistent with the life course perspective, this study will also apply a longitudinal approach to studying mothers' employment, which includes the timing of mothers' reentry after the child's birth, the stability of her labor force participation, and her exposure to high status or non-standard work. The significance of this longitudinal approach will be discussed shortly, but to begin, I will lay out how these dimensions of work highlighted by the literature influence parenting and children's learning.

The first dimension is mothers' work status, or whether or not she is participating in part-time or full-time work. As just noted, the association between mothers' paid labor, her parenting, and her children's early developmental competencies is complex, and it is important to acknowledge that studies examining these linkages have reported a combination of positive, negative, and null results (Brooks-Gunn et al. 2003; Blau and Grossberg 1992; Baum 2003; Nomaguchi 2006; Parcel and Menaghan 1990; Raver 2003; Vandell and Ramanan 1992; Waldfogel, Han, and Brooks-Gunn 2002). Nonetheless, mothers' labor force participation, both part-time and full-time, is generally regarded as something positive for families and children.

For one reason, paid labor produces wages, and the more time mothers' work, the more money they generally earn.

Of course, time in the labor market also can also reduce the amount of time mothers' have to invest in their children's learning. For example, Nomaguchi (2006) found that greater hours spent working were associated with fewer academically supporting parenting behaviors (e.g., fewer positive mother-child interactions and less reading). Huston and Aronson (2005), however, found that mothers who spent more hours at work provided higher quality home environments. This latter finding reflects the fact that, despite the time constraints often associated with work, it can also provide access to important psychosocial resources, including social networks, a systems of norms, and organizational skills that facilitate more active (and perhaps, by necessity, more orchestrated) engagement in the promotion of children's learning (Muller 1995). As such, part-time might represent the ideal balance of these work related benefits, and costs. Indeed, Parcel and Menaghan (1990) reported that part-time employment was associated with greater levels of children's verbal skills, whereas full-time employment led to reductions in children's verbal skills. As another example, Muller (1995) reported that part-time work (versus full-time) led to more parental involvement in school.

Turning to occupational prestige, higher-status segments of the labor market, compared to lower status segments, typically provide mothers with more resources—particularly in the way of flexible work schedules and higher wages—to participate in school activities or invest in learning materials (Menaghan and Parcel 1995). Indeed, mothers' work status has also been linked to children's academic outcomes (Kalmijn

1994). At the same time, these high-status jobs also provide opportunities for self-directed, complex work that can be emotionally and cognitively rewarding, shaping mothers' values surrounding learning and reducing constraints that often make investing in children's learning difficult (Davis-Kean 2005; Kohn and Schooler 1982; Menaghan 1991). Lower-status jobs, on the other hand, can often be unstable, emotionally taxing, and offer fewer economic or cognitive rewards, leading to increases in psychological distress, reductions in mothers' ability to invest in their children's learning—particularly the quality of the home learning environment and parent-child interactions—and decrements in children's early achievement (Menaghan and Parcel 1995; Presser and Cox 1997; Raver 2003).

Lastly, research highlights the importance of mothers' work schedules, and in particular, whether they worked during the day, or worked non-standard weekend or evening hours (Presser and Cox 1997). This research emphasizes how non-standard schedules can be especially disruptive to family life, interfering with household routines, domestic duties, and time spent interacting with children (Han 2005, 2006; Roeters, Van Der Lippe, and Kluwer 2010). In addition, there is also evidence that nonstandard work can lead to increases in parenting stress (Joshi and Bogen 2007), reflecting in part the finding that nonstandard work is associated with greater work related stress (Davis et al., 2008), in part the idea that mothers' experience frustration due to these work circumstances, and in part the physical and mental fatigue that often comes with working evening or irregular work hours (Gordon et al. 1986). Nonstandard work has been linked

to negative development of children's academic outcomes as a result of such parenting mechanisms (Han 2005, 2006).

Importantly, these different aspects of work can have immediate and residual implications for parental investment. For example, the negative impact of nonstandard work might be immediately ameliorated as soon as mothers either exit the labor force or transition into standard work. Alternatively, the exposure mothers' gain to knowledge rich social networks by working in high prestige occupations may remain with mothers beyond their exposure to that particular job. As such, this study employs both a contemporaneous and longitudinal approach to studying the intersection of mothers' education and employment. In keeping with this latter approach, this dissertation considers mothers' histories of employment. This study, therefore, also introduces mothers' post-fertility employment and stability of this employment. This consideration is informed by several studies reporting that mothers' employment during the first year following a birth is negatively associated with children's cognitive skills that last into elementary school (perhaps due to less child attachment and as a consequence, parental investment) (Blau and Grossberg 1992; Waldfogel, Han, and Brooks-Gunn 2001; Han, Waldfogel, and Brooks-Gunn 2002), but that these effects are generally offset by the positive effects of consistent employment during the second and third years (Blau and Grossberg 1992; Waldfogel et al. 2001; Han et al. 2002).

Of course, the aforementioned dimensions of employment are also associated with mothers' educational attainment (Presser and Cox 1997). For example, mothers with higher levels of education are more likely to be consistently employed following the birth

of a child whereas mothers with less education are more likely to be consistently unemployed or have low levels of or intermittent employment (Hynes and Clarkberg 2005). Yet more relevant to the goals of this dissertation, these effects may also vary by maternal educational attainment. Such variation might occur because education 1) provides mothers access to higher quality jobs (even within the same sector or occupational prestige) and it 2) provides knowledge about how the educational system works, promotes norms about academic success and parental investment behaviors, and imparts social psychological resources (e.g., social networks, organizational skills, self-efficacy) that help mothers deal with parenting constraints associated with work (Bandura 1986; Coleman 1988; Mirowsky and Ross 2003). Thus, the effects of work likely vary for women of different educational backgrounds. Unfortunately, studies are unclear on whether this is the case. As with the previous aim, therefore, this study proposes a number of different hypotheses.

Aim 3 Hypotheses

The first hypothesis considers how maternal education might amplify the benefits of those characteristics of work associated with parental investment, namely part-time work, high prestige work, and a consistent attachment to the labor market. This hypothesis draws on a cumulative advantage perspective, which suggests that *education might enhance the benefits generally associated with different dimensions of work*. For example, more educated women may have access for more cognitively enriching jobs, even within the same sector or employment status. An alternative example, looked at from a different perspective, is that less educated women working full-time may become

more distressed as they struggle to find adequate child care or the time to complete routine household and caregiving tasks (Edin and Lein 1997; Zaslow et al. 1998), whereas more educated women can leverage their social networks to secure reliable child care (Augustine et al. 2009).

The second hypothesis takes a resource substitution perspective, which suggests that the *benefits of employment may overlap with many of the benefits associated with education, and therefore, have a greater impact (or smaller detriment) on women who have less access to resources overall, those with less education* (Mirowksy and Ross 2003). This perspective has some preliminary support. For example, Raver (2003) found that among a population of low income (low education) mothers, women who worked full-time had less depression. As a second example, Brooks-Gunn and colleagues (2002) reported that the children of less educated (versus more educated) mothers suffered the fewest reductions in the quality of the home learning environment when their mothers worked full-time.

Summary of the Theoretical Design and Related Empirical Goals

The overarching goal of this dissertation is to provide new insights into how advantages accrue to children through maternal education and contribute to socioeconomic disparities in children's achievement. It does so by drawing on life course theory—which highlights the importance of considering the intersection of life pathways, the significance of key transitions and social context, and the interactions between mothers and children—to derive specific research questions and form a general

conceptual model. It also draws on McLanahan's notion of "diverging destinies," which provides a more substantive base from which to launch this dissertation study.

The results from this study are intended to help develop a more comprehensive model of the intergenerational transmission of advantage through mothers' education. As a larger objective, this dissertation also aims to speak to policy, and in particular, developmentally-oriented educational policies that target socioeconomic gaps in children's achievement. It hopes to do so by providing insights for policy makers evaluating the relative importance of family policies, work programs, and school investments to the wellbeing of children and families.

CHAPTER THREE:

Methods

Data

Data come from the NICHD Study of Early Child Care and Youth Development (SECCYD), a national birth cohort study of 1,364 children in or near ten U.S. cities: Little Rock, AR; Irvine, CA; Lawrence, KS; Boston, MA; Philadelphia, PA; Pittsburgh, PA; Charlottesville, VA; Morganton, NC; Seattle, WA; and Madison, WI. Recruitment for the study began in 1991, when 8,986 women were visited in hospitals during selected sampling periods shortly after giving birth. Of these women, 5,265 met the eligibility criteria for the study (mother was at least 18 years old and conversant in English, infant was a singleton and healthy, the family was not planning to move soon) and agreed to be contacted after returning from the hospital. When infants were one month old, 1,364 families (58% of those contacted) were enrolled in the study. The resulting sample of families spanned urban, suburban, and rural communities, was socioeconomically diverse (roughly equal proportions from different educational backgrounds), and mirrors the racial/ethnic composition of the general population (although not well suited for examining racial/ethnic variability).

Although the original purpose of SECCYD was to understand the developmental significance of early child care, what makes this data valuable for investigating the aims of this dissertation study is its breadth and depth of information on key concepts. In

particular, the SECCYD contains prospective information on family structure and change collected at least four times a year (a feature unmatched in larger datasets); rich data on mothers' labor force participation also collected at least four times a year, as well as data as on the qualitative features of mothers' work (e.g., occupational prestige) collected at each main study wave; multi-method, multi-observer information on parenting, including observations; repeated measures of children's achievement based on a widely used, highly valid assessment; and early measures of children's skill formation and mothers' personality and cognition to account for selection (into marriage, employment, and higher education) and other sources of endogeneity.

Sample. The analytical sample for this study began with the 1,364 children originally enrolled in the study. From this sample, 56 were excluded that lived with an alternative primary caregiver at any point before fifth grade, resulting in a final analytical sample of 1,308 children. Missing data estimation techniques allow all cases in this subsample to be retained in all analyses. These techniques will be explained shortly.

Study Measures

Table 3.1 (at the end of this chapter) includes descriptive statistics (means/standard deviations for continuous variables, percentages for binary variables) for the measures used in this dissertation. These descriptive statistics are presented by mothers' education, sorted into three categories: *high school degree of less, some college*, and *college degree or more*.

Maternal education. During the 1 month interview, mothers reported the total number of years of education they had received and their highest level of degree

attainment. For most cases, the value of maternal education directly corresponded with the number of years mothers spent in school. Exceptions include mothers with multiple postgraduate degrees (assigned a value of 21), those with some college education or vocational degree (14), and those with a GED (12). Unfortunately, accounting for increases in maternal education since the child's birth was not possible because of documented problems with these reports, although few women in this sample reported additional schooling (Magnuson et al. 2009).

Marital history. Marital histories were assessed by quarterly maternal reports of household members and their relationship to one another. From these reports, family structure was coded into one of nine mutually exclusive categories (e.g., two married biological parents, two cohabiting biological parents) at each time point. This information was used to construct two sets of variables capturing family structure histories from birth up to 54 months (drawn from 17 reports) and from 54 months to first grade (drawn from six reports). The first set of variables measure *family structure status trajectories*. Mothers stably married to the biological father during the period were assigned a value of "1," while all other family structure status trajectories were coded "0." The second set of variables captured *family structure change* (Cavanagh and Huston 2006, 2008). Mothers who experienced any family structure transition were assigned a value of "1." Mothers who experienced no change (including stably single or cohabiting) were coded as "0." Combining theses conceptualizations of family structure, the analysis also includes a set of models that considers family structure change (*1= divorce, 0 = stably married*) among

those married to the biological father at the time of birth. To account for family structure after first grade, a binary marker controls for any subsequent family structure change.

Beyond these dichotomous indicators, more nuanced measures were also considered, including a total count of family structure changes; measures that account for the type of family structure change (e.g., remarriage, repartnering); and measures that captures heterogeneity among non-stably married biological families (e.g., stably single parent families). In most instances, sample size restrictions limited the construction of such measures. In other instances, the more nuanced measures did not add additional insights. For example, model comparisons among families with two family structure changes versus one change were not significantly different. Thus, an indicator for any change represented an acceptable measurement strategy.

Maternal employment. Maternal employment was measured contemporaneously, at 54 months and first grade, as well as longitudinally. The first contemporaneous employment variable was mothers' labor force participation, sorted into dummy categories for *not working*, working *part-time* (between 10 and 29 hours per week), and working *full-time* (30 or more hours per week). To provide additional insight into how mothers' work and education interact to shape parenting, 54 month and first grade measures of nonstandard work schedules and occupational status were also included. Non-standard schedules were measured by mother reports of whether she worked evening or weekends. Again, mothers not employed were sorted into a dummy category for *not working*, while employed mothers were coded as either working *standard* or *non-standard hours*. This same coding scheme was applied for occupational prestige, which

captured whether mothers' worked a high prestige professional/managerial job, a lower prestige service or manual labor job, or were not working at the time of the interview (see Brooks-Gunn, Han, and Waldfogel 2010). Employment status after first grade (0 = *not working*, 1 = *working*) was captured by a summary measure that estimated total spells of work (1 – 3).

Longitudinal measures of employment were also employed. The first of these measures is an indicator for whether the mother worked within the first 12 months after the child's birth (1 = *yes*, 0 = *no*). This measure was based on mother reports at 1-, 3-, 6-, and 9-, and 12-months. Three other longitudinal measures are created, which capture the period between birth and either 54 months or first grade (depending on which parenting measure is being modeled and when that measure was assessed) and mirror the coding scheme for the contemporaneous employment measures. For example, the longitudinal measure for occupational prestige (based on reports collected during the major data collection waves) is indicated by three dummy variables: whether the mother *ever experienced a high prestige job*, whether she *never experienced a high prestige job*, or whether she n*ever participated in the labor market.* Similarly, the longitudinal measure for non-standard work (based on reports collected at both the main waves of data collection as well as the telephone interviews) is indicated by three dummy variables: whether the mother *ever worked a non-standard schedule*, whether she *never worked a non-standard schedule*, or whether she *never participated in the labor force*. A continuous measure for how frequently mothers' worked non-standard schedules is also created (ranging from 1 – 14 and 1 – 17). Lastly, a set of dummy measures captures the

consistency of mothers' work, particularly whether she had *consistently participated in the labor force* since the time the focal child was twelve months (based on the quarterly reports), whether she was *employed intermittently*, or whether she was *never employed*.

Parenting. The different parenting mechanisms are captured by several measures. The first captures children in their homes and the quality of the *home environment*, measured at 54 months by the H.O.M.E. inventory. This inventory is based on both maternal reports collected during face-to-face interviews (e.g., on the types of toys and games available, use of structured activities like museum visits) and observer ratings of language/academic stimulation and the physical home environment. Scores range from 18-55 and have modest reliability (*alpha* = .82).

Mothers' involvement in children's school is measured at the start of kindergarten and at first grade. For the kindergarten measure, teachers assessed the extent to which (1 = *not often*, 2 = *sometimes*, 3 = *most of the time*) mothers had engaged in six forms of contact with schools, including school visits, written or telephone contacts, involvement in classroom activities, and timely responses to teacher contacts. Responses were summed (6-18, α = .66). For the first grade measure, teachers assess the degree to which mothers' engage in various aspects of school involvement and exhibited behaviors that encourage learning (1 = *never* or *not at all*, 5 = *more than once a week* or *very interested*). Again, scores were summed (1.24 – 4.19, α = .90). At 54 months and first grade, mother-child interactions were evaluated during 15-minute videotaped structured interactions designed to evaluate the age-appropriate qualities of mothers' behavior and the parent-child relationship. Response categories ranging from 1 = "Very Low" to 7 = "Very High" are

summed to create the *maternal cognitive stimulation* composite, based on two seven-point ratings on parents' stimulation of cognitive development and the quality of help, and the *maternal sensitivity* composite, based on three ratings (supportive presence, hostility [reversed], and respect for autonomy). Scores range from 18-42 and have high reliability (*alpha* = .91). Maternal *expectations* were assessed at 54 months and first grade by two separate instruments. At 54 months mothers responded to questions regarding their demands for mature child behaviors (e.g., independence, prosocial behavior) associated with young children's learning (Raver, Gershoff, and Aber 2007). Responses were summed to form a Mature Behaviors composite measure with scores ranging from 78-181 (*alpha* = .89). At first grade, mothers completed the Parental Modernity Scale (Schaefer and Edgerton 1985), a 30-item measure of parental beliefs that reflects attitudes toward parental management, schooling, and the ideals of concerted cultivation documented by Lareau (2004).

Child achievement. In first, third, and fifth grade, children took two subtests of the *Woodcock-Johnson Psycho-Educational Battery-Revised* (WJ-R), a widely used comprehensive battery for assessing cognitive abilities and academic skill levels (Woodcock, McGrew and Mather 2001). The two subtests used in the analysis were designed to measure academic skills. Applied Problems is a test of simple *math* problems and calculations (alpha = .80-.83). Letter-Word Identification is a test of *reading* identification (alpha = .88-.92). The two subtests are comprised of individual items arranged in order of difficulty, with the easiest item presented first and the most difficult items presented last. Each item was administered until the study child's operating range

was established. Raw scores were created by summing the number of correct responses plus a score of 1 for every item in the test below the child's minimum operating level. Given this design, raw scores were converted to W scores, a special transformation of the Rasch ability scale that contain mathematical properties (e.g., equal interval units) well suited for analytic models of academic growth. The W scores for each subtest are centered on a value of 500, the approximate average performance of beginning fifth-grade students.

Controls Variables

To account for potential confounds of the links explored in this dissertation study, models for all three research aims control for several important covariates. These covariates are described below. In addition to these measures, aim 3 (that focuses on maternal employment) will incorporate other relevant controls. A description of these controls will follow the description of the main study covariates.

Children's characteristics. To account for the potential for children's pre-existing (and possibly inherited) cognitive, intellectual, and social skills to influence parenting, mothers' romantic relationships or labor force participation, and children's own subsequent learning, models control for the *earliest* available measures of children's cognitive abilities and psychosocial skills (Ambert 2001; Cooper and Crosnoe 2007; Epps and Huston 2007). Cognition is measured at 36 months by the Bracken Basic Concepts test, a set of individually administered subtests that assess cognitive ability (Bracken 1984). Scores for all subtests are summed to create a composite measure that ranged from 0 – 61 and displayed high internal reliability (alpha = .93). Psychosocial

development is measured by mothers' reports at 1 month and 6 months of their children's temperament (scores range from 1 - 4) and by the 15 month assessment of children's attachment (0 = *secure*, 1 = *not secure*) based on the "Strange Situation" inventory. Child behavior is assessed by the Child Behavior Check List (CBCL), a list 118 items that includes a broad range of children's emotional and behavioral problems, when children were 24-months old. A Total Problems composite captures both internalizing and externalizing problems (scores range from 30-100). Other potential child-level confounds include child gender (0 = *male*, 1 = *female*), birth order (1= *first birth*, 0 = *higher order birth*), and race (dummy variables for *White*, *Black*, and *Other*).

Other maternal characteristics. To account for background characteristics that may simultaneously select mothers into stable marital unions, particular employment pathways, and higher education, and influence parenting behaviors, models will include measures of mothers' history of depression, personality traits, and cognitive abilities. Depression was measured at 6, 15, 24, 36 and 54 months using a questionnaire developed from the Center of Epidemiologic Studies – Depression Scale. Responses were summed to create a scale of depression ranging from 0-60 (α =.90-.91). Scores 16 or higher were coded a "1" for depression during that assessment period and summed to create an index of depression history. Two personality measures, extraversion and agreeableness, were measured at 6 months subscales of the "Self Scale," a personality measure taken from the NEO Personality Inventory (alphas were .74 and .75). Lastly, to control for hereditable cognitive and intellectual skills that could confound the linkage between mothers and children's education, models control for mothers' scores on the Peabody Picture

Vocabulary Test–Revised (PPVT-R), an individually administered test of hearing vocabulary designed for persons 2 ½ to 40. Scores were standardized to a mean of 100 and a standard deviation of 15. Other characteristics controlled for include mothers' age and the number of children under 18 with whom the mother was currently coresiding (measured continuously).

Paternal characteristics. Another set of potential confounds are father characteristics, particularly fathers' education (coded as 1 = *college degree or higher*, 0 = *no college degree*). Controlling for paternal education helps account for unobserved inherited genetic characteristics among children associated with fathers' school persistence, or the potential for fathers' characteristics to influence mothers' labor force participation. At the same time, such controls could obscure the pattern of associations, particularly in the case of aim 2 because correlations between paternal and maternal education and marriage could also reflect assortative mating as much as fathers' influence on children's achievement. Still, the existence of these correlations necessitates controlling for paternal education.

Additional academic factors. To account for the onset of formal instruction and its contribution to learning trajectories, models that include children's achievement will also include first, third, and fifth grade measures of total classroom quality derived from the Classroom Observation System (COS) (averaged across the three time points). The total quality composite at all three time points represented the sum of three ratings of teacher behavior (e.g., sensitivity/responsivity) and four ratings of classroom organization and

climate (e.g., classroom management), although these ratings vary some across grades. Cronbach's alpha's ranged from .76 at third grade to .89 at third and fifth grade.

Family income. An income-to-needs ratio was calculated for each family at 1 month, 54 months, first, third, and fifth grade by dividing maternal reports of all sources of household income by the federal poverty threshold for that family size. For the 1 month measure, average income-to-needs ratios of less than 1.85 were used to designate children as having experienced poverty around the time of birth. This measure controls for the potential for early poverty to interfere with children's cognitive development (Duncan et al. 2005). It also captures unobserved selection factors associated with marriage and work. The other income variables (incorporated as 54 month/first grade measures and a summary measure of average earning from first-fifth grade), while exogenous to both family structure, maternal employment, and maternal education, were entered into the model to account for unmeasured confounds (Mayer 1997). Importantly, these income measures did little to affect the model results and were rarely significant.

Additional aim 3 controls. Because employed mothers are likely to use some form of child care, aim 2 models considered controlling for the type and quality of this care, which may be associated with children's school readiness and subsequent academic development (NICHD ECCRN 2005). At each main study wave, parents reported on who provided child care (e.g., mother, grandparent) and where (e.g., center care, family day care), and trained observers measured the quality of this care by the Observational Rating of the Caregiving Environment (ORCE) (NICHD EECRN 2005b). A binary measure captures whether a child's primary arrangement at 54 months was center care (1) or

another arrangement (0) and a second marker captures whether this care was rated as high quality (above the mean for that assessment period). For both measures, children in sole maternal care are coded as 0. Longitudinal maternal employment models incorporate a more expansive measure which tallies the number of times children experienced 1) center care or 2) high quality care. In addition, two attitudinal measures are included, which tap mothers' beliefs about the costs (alpha = .88) and benefits (alpha = .80) of employment (based on a questionnaire administered to mothers when children were six months old), which may confound the association between mothers' work and parenting behaviors. Finally, models employing a contemporaneous measure of mothers' employment (i.e., at 54 months or first grade) included a more stringent control for children's intelligence, which was measured by the 54 month WJ-R Letter-Word and Applied Problems subtests and averaged to create an overall index of children's school readiness (alphas for both subtests = .84). This measure was omitted from the other models because it was considered endogenous to mothers' education and her employment/marital trajectories.

Analysis Plan

The purpose of this study is to two fold. The first goal is to estimate whether the associations between mothers' education and children's elementary school trajectories of learning are mediated by mothers' parental investment behaviors during the transition to elementary school—in other words, to quantitatively model the linkages depicted in Figure 2.1. These linkages will be estimated by a path analysis model that includes a latent growth curve of child achievement. Maternal education (measured continuously) is the exogenous predictor. Parenting, the mediator, is estimated by two latent factors that

capture parental investments during the school transition. The first factor measures parenting immediately before the transition into formal schooling, when children are 54 months old and beginning kindergarten. The second factor measures parenting during the period that marks the start of formal schooling: first grade. Incorporating latent constructs of parenting (rather than each individual measure) better accounts for the contribution of each measure, allows for more precise modeling of measurement error, and is a more parsimonious modeling strategy (Bollen 1989).

The outcome variable, child achievement, is estimated by a latent growth curve (or latent trajectory). This trajectory is a single line that best fits the multiple time-specific measures of achievement (first, third, and fifth grade) characterized by two latent factors—an intercept (achievement in first grade) and slope (change in achievement from first-fifth grade). Growth curve analysis within SEM represents a particular type of random coefficient modeling that estimates changes in achievement over time and individual differences in this change (Bollen and Curran 2005; Willet and Sayer 1994). Importantly, these changes are not functionally equivalent for children's reading and math skills. Therefore, latent trajectories of children's Letter Word development and Applied Problems development are modeled separately.

Figure 3.1 presents the analytic model incorporating these three key elements of the conceptual model depicted in Figure 2.1. In this model, the two parenting factors were regressed on maternal education, the intercept is regressed on both parenting factors, and the slope is regressed on the parenting factor measured at first grade. A covariance between the two parenting factors captures the correlation between them.

Lastly, the slope is regressed on the intercept. This modeling step takes into account maternal education differences in children's initial achievement, which could complicate estimates of their slopes (see Seltzer, Choi, and Thum 2003). This step also controls for any unobserved heterogeneity in the intercept that may be linked to children's achievement slopes (Mirowsky and Ross 2007). Unfortunately, this strategy does not address unmeasured heterogeneity in the intercept. Therefore, an extensive set of covariates are employed as predictors of both the parenting and children's achievement factors. In sum, this model established the longitudinal mediational pathway between maternal education and child achievement through parental investments. The indirect effect of maternal education on child learning via parenting was estimated using the product of the coefficient approach and delta method standard errors (Bollen 1989; MacKinnon, Fairchild, and Fritz 2007).

The second goal of this study is to broaden our understanding of this conceptual (and statistical) model in order to better reflect the confluence of contextual factors that likely work together to shape parental investment behaviors and children's learning development. The factors explored in this study are mother's marital histories and her experiences in the labor market, articulated by aims 2 and 3. Adding measures of mothers' marital unions and employment status as predictors of the two parenting factors will establish the role of marriage and employment in shaping mothers' parenting and children's achievement trajectories. Indicators of marriage and employment that parallel the early childhood period (up through 54 months) are entered as predictors of the 54 month/kindergarten parenting factor. Measures that capture the school transition

(between 54 months and first grade) or the start of formal schooling are modeled as predictors of the first grade parenting factor (refer to Figure 3.1). To account for subsequent changes in relationship or employment status after first grade, relevant markers (e.g., subsequent family structure change) were regressed on the slope of children's achievement. These models also include the appropriate covariates, described above.

Next, statistical interactions between mothers' education and the marriage/employment measures were entered into the model (refer to Figure 3.1). Statistically significant interactions suggest that the contribution of marriage/employment to parenting varies by women's education. Graphing the significant interactions at different values of education (e.g., 12 years, 16 years) provides additional insights into the pattern of this association. In order to determine whether this pattern extends to children's achievement, the conditional indirect effect was calculated (see Preacher, Rucker, and Hayes 2007 for a full explanation). Calculation of the indirect effect was based on the following formula:

$$f\,(\Theta|\ W) = b_1\,(\,\hat{a}_1 + \hat{a}_3 W).$$

This formula generates a point estimate, where W represents different values of education, a_1 represents the marriage/employment parameter, a_3 represents the interaction term, and b_1 represents the association between the mediator (parenting) and the dependent variable (the intercept or slope of achievement). For example, this formula will calculate an estimate of the indirect association between marriage and achievement (via parenting) in cases where the mother has twelve years of schooling. The statistical

significance of this point estimate is determined by the product of the coefficient method (MacKinnon, Fairchild, and Fritz 2007).

All models were estimated in Mplus (Muthen and Muthen 2004). The quality of models and overall "fit" were evaluated by the comparative fit index (CFI) and root mean square error of approximation (RMSEA). The CFI ranges from 0 to 1. Values over .90 generally indicate acceptable levels of model fit. RMSEA values of less than .07 are accepted as indicators of good model fit. In addition, the chi-square test statistic also helps assess model fit (non-significant values representing good model fit), although this statistical test is sensitive to larger sample sizes. Thus, the CFI and RMSEA will be relied on the primary indicators of model fit.

Dealing with Missing Data

As noted earlier, missing data, both due to item-level missing as well as sample attrition, will be handled with missing data estimation techniques. Estimation of missing data is necessary because any reduction in the sample, especially through listwise deletion, can introduce bias and represent what is referred to as an "additivity violation" (Frank and Min 2007). In other words, reducing the representation a group in the sample may leave analyses open to the criticism that results would have been different if that group had its full, unbiased representation. This study takes advantage of a feature available in Mplus, full information maximum likelihood (FIML) estimation, to account for missing data and correct for nonresponse and attrition (Allison 2001).

Essentially, FIML works by estimating a likelihood function for each individual based on the variables that are present so that all the available data are used. FIML

estimation has proven to be a superior, less biased strategy for dealing with missing data than mean/mode imputation, listwise deletion, or other conventional techniques that are now falling from favor (McCartney, Burchinal, and Bub, 2006). Some have also argued that it is preferred to other cutting-edge missing data estimation methods, particularly multiple imputation (Allison 2001). In simulation studies, FIML has been shown to produce unbiased parameter estimates and standard errors when data is MAR (missing at random), which assumes that the probability a response variable is observed (or unobserved) depends on the value of the other variables which have been observed (Rubin 1976). Although it is not really possible to know for sure whether data are MAR because information about the value of the variable missing is unavailable, post hoc examination of missing data patterns indicated that the assumptions of FIML (data was MAR) were generally met (Bollen and Curran 2005).

Addressing Selection Problems

Most of the literature linking maternal characteristics (whether they are education, marital history, or employment experience) with child outcomes is rife with endogeneity problems. If some factor selects a mother into these statuses and also affects her child's achievement (or the mechanisms that promote achievement), then models that do not take this factor into account may misattribute cause when they reveal a significant association between a characteristic of the mother and the child outcome. Dealing with such problems is a critical part of advancing research on the intergenerational transmission of advantage through mothers. Unfortunately, without experimental designs, which are difficult and expensive to implement, this problem can never be completely solved

(Duncan, Magnuson, and Ludwig 2004). Many studies, however, have taken steps to promote causal inferences based on statistical models.

Controlling for a large set of covariates is one common strategy, which I will be employing here. The limitation of this strategy is that it only addresses the potential impact on causal inference of confounds that are known and can be observed in the data. Some confounds cannot be easily observed. Genetic traits are the best example. Moreover, some confounds are simply unknown and unobserved. This dissertation employs a large number of *observed* covariates that account for several sources of endogeneity, as described above. Using longitudinal data is another useful tool for dealing with such unobservable confounds because comparing the achievement of children over time who have the same achievement level at some early time point at least partially accounts for what selected them into that earlier achievement level (Glazerman, Levy, and Myers 2003). Again, I have employed this strategy here.

Still, other, more robust, analytic strategies for promoting causal inference are available. For example, fixed effects models rely on repeated measures to capture within-child variability, thereby accounting for omitted time-constant factors that may differ between cases (Allison 2009). Alternately, an instrumental variable analysis, which isolates the exogenous component of mothers' schooling, is able to fully parcel out variation in a predictor that is related to the outcome only through that predictor. These analysis approaches, however, are not well suited to the model described above or the structure of the data. As such, this study does what it can to reduce the potential for bias, but must acknowledge its limited ability to make causal inferences.

Table 3.1 Descriptive Statistics for All Study Variables by Maternal Education

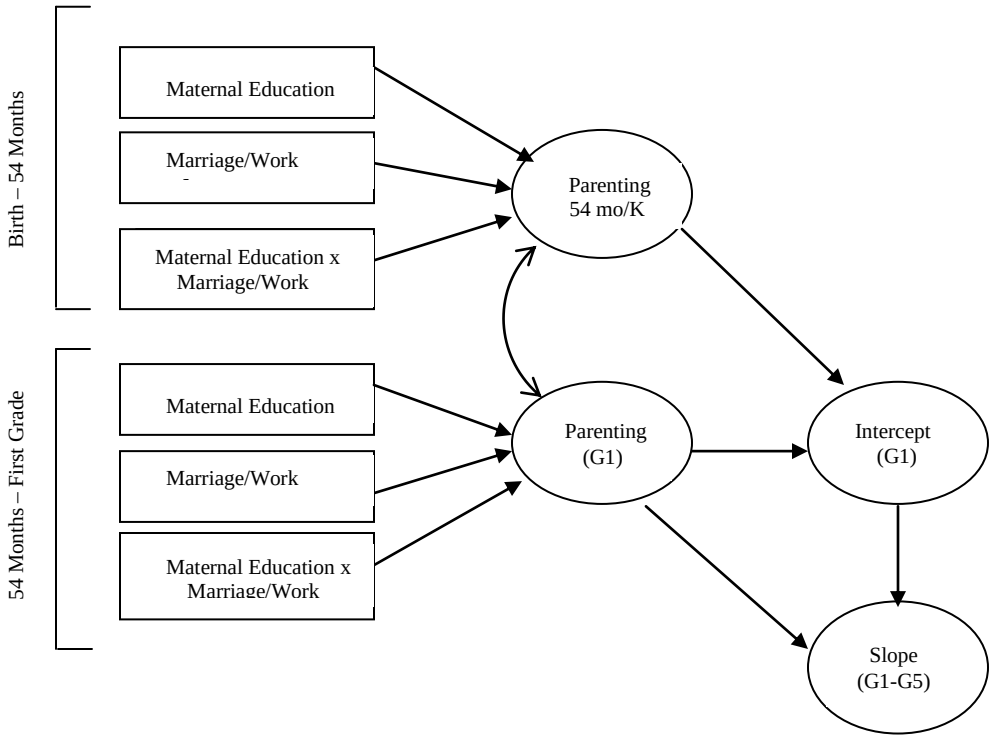
	Percentages and Means (SE)		
	High School / Less	Some College	College or More
Child Characteristics			
Gender (female)	44%	50%	50%
White	70 %	78%	92%
Black	21%	16%	2%
Other	9%	6%	6%
First order birth	43%	43%	48%
Behavioral problems at 36 months	42.58	35.55	32.09
	(20.62)	(17.06)	(14.83)
Bracken School Readiness (36 months)	9.57	13.83	19.60
	(7.30)	(9.10)	(10.11)
Temperament (mean 1 and 6 month scores)	3.27	3.24	3.25
	(.44)	(.45)	(.41)
Attachment (secure)	.60	.59	.66
	(.49)	(.49)	(.47)
School readiness (WR-R at 54 months)	386.22	396.34	405.34
	(18.20)	(17.14)	(14.86)
Family Characteristics			
Number of children in home at 54 months	2.40	2.26	2.12
	(1.24)	(.91)	(.79)
Number of children in home at first grade	2.50	2.39	2.28
	(1.14)	(.96)	(.82)
Income-to-needs 54 months	1.92	2.96	5.37
	(1.36)	(1.92)	(4.00)
Income-to-needs at first grade	1.98	3.32	5.73
	(1.32)	(2.24)	(3.45)
Father college degree or higher	8%	22%	78%
Father in home at 54 months	48%	66%	90%
Father in home at first grade	43%	61%	86%
Family poor at child's birth	45%	20%	5%
Mother Characteristics			
Mother age at birth	24.27	28.01	31.60
	(5.39)	(4.96)	(3.94)
Depression history	1.21	.82	.51
	(1.43)	(1.19)	(1.00)
Extraversion	41.44	42.49	43.35
	(5.73)	(5.68)	(5.90)
Agreeableness	44.58	46.17	47.77
	(5.75)	(5.02)	(4.66)
Intelligence (PPVT-R)	85.75	96.92	111.00
	(14.29)	(14.27)	(16.56)
Maternal attitudes toward benefits of work	19.38	19.25	18.98
	(3.11)	(3.26)	(3.16)
Maternal attitudes toward costs of work	19.12	18.07	17.74
	(5.22)	(5.67)	(5.35)
Parenting Measures			
H.O.M.E. total score	42.29	45.82	48.90
	(6.37)	(4.58)	(3.23)
Maternal sensitivity 54 months	15.55	16.89	18.01
	(3.13)	(2.89)	(2.10)
Maternal sensitivity first grade	15.01	16.78	18.06
	(3.29)	(2.95)	(2.27)
Maternal cognitive stimulation 54 months	7.82	8.88	9.96
	(2.37)	(2.49)	(2.12)
Maternal cognitive stimulation first grade	7.23	8.95	10.26
	(2.51)	(2.42)	(1.99)

Table 3.1 Cont. Descriptive Statistics for All Study Variables by Maternal Education

	Percentages and Means (SE)		
	High School / Less	Some College	College or More
Teacher reported school involvement - K	14.57	15.65	16.35
	(2.74)	(2.36)	(1.93)
Mother reported school involvement -K	3.70	4.47	5.23
	(1.65)	(1.67)	(1.62)
Behavioral expectations 54 months	137.26	141.04	138.79
	(18.65)	(15.28)	(15.26)
Parenting philosophy first grade	6.23	7.47	8.47
	(1.60)	(1.56)	(1.37)
Teacher reported school involvement first grade	2.67	2.88	3.19
	(.59)	(.54)	(.42)
Mother reported school involvement first grade	2.19	2.24	2.34
	(.44)	(.43)	(.38)
Achievement Outcomes			
WJ-R Applied Problems 1st grade	463.43	468.33	476.34
	(15.34)	(14.35)	(14.26)
WJ-R Letter Word 1st grade	442.87	452.10	460.10
	(23.91)	(21.78)	(23.22)
WJ-R Applied Problems 3rd grade	491.72	493.49	502.42
	(16.07)	(17.35)	(9.43)
WJ-R Letter Word 3rd grade	485.08	496.21	500.61
	(20.52)	(12.05)	(15.61)
WJ-R Applied Problems 5th grade	503.75	509.74	515.35
	(15.13)	(15.24)	(9.45)
WJ-R Letter Word 5th grade	501.22	508.57	516.99
	(19.57)	(11.32)	(14.51)
Selected Aim 1 Descriptive Variables *			
Married at 54 months	42 %	59 %	85 %
Cohabiting at 54 months	20 %	13 %	5 %
Single mother at 54 months	27 %	18 %	9 %
Step mother family at 54 months	9 %	8 %	1 %
Other type of family structure at 54 months	3 %	3 %	1 %
Total family structure changes birth-54 months	1.06	.52	.13
	(1.61)	(1.06)	(.48)
Any family structure change 54 months-1st grade	18 %	14 %	07 %
*Selected Aim 2 Descriptive Variables**			
Mother employed full-time at 54 months	55 %	51 %	44 %
Mother employed part-time at 54 months	18 %	18 %	26 %
Mother not employed at 54 moths	42 %	32 %	27 %
Mother employed full-time at first grade	55 %	54 %	44 %
Mother employed part-time at first grade	17 %	17 %	25 %
Mother not employed at first grade	28 %	30 %	31 %
Non-standard work schedule 54 months [a]	12 %	13 %	10 %
Non-standard work schedule first grade [a]	18 %	22 %	21 %
High prestige work 54 months [a]	10 %	25 %	68 %
High prestige work first grade [a]	11 %	25 %	70 %
Other variables			
Classroom quality summary measure	33.06	34.24	35.45
	(3.05)	(2.94)	(2.62)
Center care at 36 months	23 %	30 %	37 %
Center care at 54 months	47 %	50 %	64 %
High quality child care at 36 months	26 %	38 %	52 %
High quality child care at 54 months	37 %	51 %	60 %
n	427	455	483

Notes: * Reported for descriptive purposes, and not all variables used in analysis. Specific employment and family structure variables used in analysis will be detailed in later chapters. [a] Denoted subsample of working mothers.

Figure 3.1 Path Model Depicting Structural Relations among Independent Variables, Parenting, and Achievement



CHAPTER FOUR:

Preliminary Modeling Steps and Results for Baseline Models

This chapter describes in greater detail the modeling steps that went into to building the main analytic model, the results of which are described in this chapter. Specifically, this chapter explains how unconditional growth models established the proper functional form for estimating trajectories of reading and math. It also explains key modeling decisions, such as regressing the intercept factor on the slope factor. Furthermore, the procedures and reasons for estimating latent measures of parenting are explained and the estimates of the measurement model are provided. Finally, after establishing the basic pieces of the model, this chapter describes the full baseline model that links mothers education via parenting to children's learning trajectories, and teases out the direct and indirect associations amongst these pathways. This final model includes the theoretically specified covariates described in Chapter Three.

Modeling Children's Learning Trajectories

The first step in the analysis is to fit a pair of unconditional growth curve models for the two longitudinal measures of child achievement. One model will capture children's reading development (measured by the Letter-Word subtest), and the other will capture children's math development (measured by the Applied Problems subtest). This initial step will help determine whether children vary significantly in their initial reading and math skills and the rates at which these skills grow over time. For these models, the

first two slope factor loadings were set to 0 and 2. Because the slopes for both reading and math were not perfectly linear (there was a deceleration between time 2 and 3 that was between 40 percent and 46 percent the rate of change between time 1 and 2), the third factor loading was freed, allowing the model an efficient means of estimating the non-linearity in the slope.

Results from the unconditional model (not shown in a table) of reading skills revealed that the average child began school with a score of 452.86 on the WJ-R Letter Word subtest (indicated by the intercept), and increased this score at a rate of 20 points per year between first and fifth grade (captured by the slope). The significant variance estimates for these intercept and slope factors (460.81, $p < .001$ for intercept; 21.05, $p < .001$ for slope) indicated that children in the sample varied substantially around these means. Results from the unconditional model of math skills revealed that that the average child began school with a score of 470.23 on the WJ-R Applied Problems subtest, and increased this score at a rate of 14 points per year between first and fifth grade. The significant variance estimate for the intercept factor (146.49, $p < .001$) indicated that children's initial math scores varied substantially around the mean. However, the negative slope variance suggested that there is no individual variation in the rates at which children's math scores change.

An alternative explanation for the negative variance in the math slope was that the model lacked sufficient power to detect significant variance. In order to examine this possibility, six variables were added to model. This step aimed to increase the model's statistical power by incorporating several commonly documented predictors (e.g., gender,

race, family income) of math achievement (Pong 1997; Riegle-Crumb 2006). These variables did not prove to be significantly associated with the math slope. Thus, individual differences in the rate at which children's math scores change are assumed to be non-significant. Subsequent analyses of children's math development have constrained the slope factor to equal 0 and focus on explaining how the focal variables in this study predict variation in the math intercept.

Covariance between the Intercept and Slope

An additional finding to arise from the unconditional growth curve model of children's reading skills is that the intercept and slope factors negatively covary (-63.19, $p < .001$). This negative covariance indicates that children who began school with more developed reading skills have less steep upward learning curves once school began. Alternatively, children with less developed reading skills post greater gains once formal instruction began. An inverse association between children's learning intercepts and slopes has also been reported in other studies, using both the SECCYD and other data sets (Downey, von Hippel, and Broh 2004; Kowaleski-Jones and Duncan 1999; NICHD ECCRN 2005). This pattern is also not surprising given that W scores from WJ-R subtests are centered on a value of 500 to approximate the average performance of beginning fifth-grade students, creating a "ceiling effect."

Importantly, although children who begin school with fewer reading skills make greater gains over time, they do not ever fully catch up with their more school-ready peers. For example, a child who begins school with a Letter Word score 10-points below the mean score of 442.85 is estimated to score 504.63 points in fifth grade. A child who

begins school with a Letter Word score 10-points above the mean is estimated to score 516.69 points in fifth grade. Thus, identifying the factors that predict variation in the intercept is just as important as identifying the factors that predict variation in the slope. This is also true for children's math scores, which begin at significantly different levels, but develop at a steady rate over time.

At the same time, the strong negative association between children's reading intercepts and slopes may obscure how maternal education and its connection to mothers' parenting influences the development of children's reading scores across elementary school. Such confounding may exist because maternal education (and its connection to parenting) is likely positively associated with children's reading scores at the start of school (see Augustine and Crosnoe 2010). As such, comparing rates of change between children whose mothers have high levels of education and children whose mothers have low levels of education may be complicated by the fact that these two groups of children have substantially different starting values. Indeed, adding dummy variables for the five category demarcation of mother's education to the growth models of children's reading and math revealed a strong association between the five categories of mother's education and the staring levels (see Table 4.1). As expected, as mothers' education increased, so did her child's learning skills at the start of school. This association was also evident when estimating the association between mother's education and children's reading (controlling for initial intercepts) slopes, where children whose mothers had higher levels of education progressed at greater rates.

One way to clarify this association is to model the intercept as a predictor of the slope (see Seltzer, Choi, and Thum 2003 for a full explanation of this modeling strategy). By holding initial status constant, this modeling strategy not only takes into account maternal education differences in children's initial reading scores, but it also controls for any unobserved heterogeneity in the intercept that may be linked to children's reading slopes (Mirowsky and Ross 2007). In this way, modeling the slope as a function of the intercept helps address any potential sources of selection that could bias estimates of the association between maternal education and children's reading slopes. Unfortunately, this strategy does not address selection in the intercept. In order to deal with this possibility, an extensive set of covariates are employed as predictor's of children's reading and math intercepts. Still, the possibility remains that other unmeasured or unobserved sources of variation associated with mother's education are not controlled for in the model.

Modeling Parenting as Latent Constructs

A final preliminary step in this dissertation study is to determine whether the various parenting indicators can be modeled as latent constructs. Doing so would not only be more parsimonious, but latent constructs better account for the individual contribution of each measure and allow for more precise modeling of measurement error (Bollen 1989). This approach would also complement the conceptual view of parenting presented in this study. Thus, confirmatory factor analysis is used to estimate two latent parenting constructs, one which captures parenting before first grade (based on 54 month and kindergarten parenting measures), and a second that captures parenting at first grade. In this effort, two separate measurement models are estimated. The first model specifies the

54 month/kindergarten measures (called the 54 month parenting factor). The second model specifies the first grade measures (referred to as the first grade parenting factor). After assessing the model fit of each factor, the two factors are then entered together into one measurement model, and model fit is reassessed (Anderson and Gerbing 1988).

The latent measure of parenting at 54 months is based on four indicators: maternal sensitivity, maternal stimulation, maternal involvement with her child's schooling at kindergarten, and the quality of the home learning environment. This model fit the data satisfactorily, with $\chi 2 = .42$, $df = 1$, $p < .52$; $CFI = 1.00$; $RMSEA = .00$. Standardized factor loadings ranged from .48 to .74, and all were statistically significant at the minimum probability level of .001. The initial run of this model included a 54 month measure of maternal expectations for child behavior, but this measure, which had an unacceptably low factor loading of .08, was removed from the model. For the structural models, this measure of behavioral expectations will be considered as a potential independent predictor of the intercept and slope factors and mediator of the link between maternal education and child learning.

The latent measure of first grade parenting is also based on four indicators: maternal sensitivity, maternal stimulation, maternal involvement with her child's schooling at first grade, and mother's child rearing beliefs. Again, the model fit the data satisfactorily, with $\chi 2 = .42$, $df = 1$, $p < .52$; $CFI = 1.00$; $RMSEA = .00$. Standardized factor loadings for this model ranged from .44 to .82 and were all statistically significant at the minimum probability level of .001. Combining these two factors into one measurement model required some respecification (due to a drop in model fit), with

covariances among variables that are likely to contain correlated measurement error (e.g., maternal stimulation at 54 months and at first grade) added. This final measurement model demonstrated acceptable levels of model fit ($\chi 2 = 92.54$, $df = 14$, $p < .001$; *CFI* = .97; *RMSEA* = .07. The standardized and unstandardized factor loadings for the final measurement model are represented in Table 4.2. Although these two factors were highly correlated (correlation = .90), but post hoc tests provided evidence that they represented distinct concepts and could be modeled separately.

Estimating the Association between Parenting and Achievement

The next step in the analysis involved estimating a path model connecting maternal education to the measures of parenting, and these measures to the child learning factors (refer back to Figure 3.1). Building this path model proceeded in two stages. First, the direct paths between the parenting measures and child learning factors were estimated. Parenting measures included the two latent factors described above as well the measure of mother's expectations of her child's behavior. The 54 month parenting factor and measure of mother's expectations of her child's behavior was modeled as predictors of the intercept. The first grade parenting factor was modeled as a predictors of the intercept and slope. This modeling step also involved the inclusion of the previously identified covariates that may confound the association between parenting and child learning (mother/child/family sociodemographic characteristics, mother/child psychosocial characteristics, and mother/child cognitive abilities). In addition, classroom quality was modeled as an exogenous predictor of children's learning trajectories. To account for the correlation among the two time-series latent parenting factors, a

covariance between them was added. As noted earlier, models were estimated separately for children's reading skills and their math skills. Model results from this initial step are noted in the text. Coefficients from the fully mediated model (which are nearly identical to the preliminary model) are presented in Table 4.3.

For children's reading skills, results from this modeling step revealed that parenting before children begin first grade was significantly associated with children's reading intercepts (b = .49, SE = .18, p < .001) while first grade parenting was significantly associated with children's reading slopes (b = .19 SE = .05, p <.001). In addition, maternal expectations of child behavior was significantly associated with reading intercepts (b = .11, SE = .04, p < .01). Turning to children's math trajectories, parenting before the start of school was significantly associated with children's math intercepts (b = .59, SE = .18, p < .001). For children's math scores, maternal expectation of children's behavior was not a statistically significant predictor. However, this measure of maternal expectations was retained so that the two models—for reading and math—were estimated using the same set of parameters.

As for the covariates, very few were significantly associated with children's reading or math trajectories. Not surprisingly, children's early cognitive skills (measured at 36 months by the Bracken Basic Concepts scale) were significantly associated with both their reading and math intercepts while mothers' cognitive skills were significantly associated with the reading slope and math intercept. In addition, females had higher math scores at the start of school and greater improvements in reading achievement across elementary school. Black children (compared to White children) began school

with fewer math skills. Lastly, mothers' employment (both full-time and part-time) was associated with greater math skills at the start of school. One unexpected finding is for the reading model, where mother's age was negatively associated with children's learning skills. For both models, maternal education was not directly associated with any of the learning factors. As we will see in the next modeling step, however, maternal education is indirectly associated with children's learning through its connection to parenting.

Adding Maternal Education to the Model and Determining Mediation

For this next step, a path connecting maternal education to the significant parenting measures was added, again with the relevant covariates added as predictors. Results from the full path model predicating children's reading skills appear in Table 4.3. These results take into account the modeled associations described above. However, as explained shortly, maternal expectations has been removed from the model. Direct and indirect effects of maternal education on child learning were estimated and are reported in the text.

Results from these models reveal that mothers with more years of schooling engage in the parenting behaviors associated with children's learning more often and to a greater extent. Standardized model coefficients for the continuous measure of mothers education predicting early parenting was .20 (SE = .04, $p < .001$) for both models (math and reading). The standardized model coefficient for maternal education predicting the first grade measure of parenting predicting equaled .27 (SE = .03, $p < .001$) for both models. The identical coefficients for the separate math and reading models are not

surprising, given that for both models, the same set of predictors went into estimating the association between maternal education and parenting.

Connecting this finding to children's achievement, standardized estimates of the indirect effect reveal that a statistically significant pathway links mothers' education to children's reading intercept (b = .10, SE = .04, p < .02) and slope (b = .05, SE = .02, p < .001) and math intercept (b = .12, SE = .05, p < .001) via the latent measures of parenting. These pathways reveal that parenting (measured by the two latent constructs) mediates the association between the maternal education and children's learning. In addition, both models had good model fit (see Tables), and explained a moderate to large portion of the variance in children's reading intercepts (R^2 = .33), slopes (R^2 = .51) and math intercepts (R^2 = .48). This full model also explained a large portion of the variance in the latent measures of parenting (R^2 = .66 for 54 month parenting, R^2 = .70 for first grade parenting). However, this model explained very little of the variance in the measure capture mothers' behavioral expectations (R^2 = .03).

Parameter estimates for these two sets of models (which vary very slightly due to the different model parameters) reveal that mothers who are Black or of another non-White ethnic background, have a history of depression, or live in a home with greater numbers of children engage in the parenting behaviors captured by the latent factor less often. Mothers who are pro-social (agreeable, outgoing), older, and have male children engage in the parenting behaviors captured by the latent factors more often. In addition, both mothers and children's cognitive scores were significantly associated these parenting measures.

As for the role of mothers' expectations for her children's behavior in children's reading development, increases in maternal education did not seem to increase such expectations. Nonetheless, the possibility that this linkage is moderated by other factors associated with mothers' education, such as her work situation or union status, remains. This possibility was explored in future steps, but did not reveal significant results. Therefore, this measure has been dropped from subsequent analyses.

Finally, as a check on the model specification, maternal education was interacted with the parenting factors and entered into the model as predictors of the achievement intercept and slope. This step tested an alternative hypothesis: that more highly educated mothers engage in more parental investment-style behaviors because such behaviors yield greater returns. For example, the benefits of parental involvement in schooling may be greater for more educated mothers because teachers are more receptive to such mothers' requests and open to their presence at the school (compared to less educated mothers) (Desimone 1999; Horovat, Weininger, and Lareau 2003; Lee and Bowen 2006; McNeal 1999). Adding such interactions to the model, however, did not yield support for this hypothesis. Such interactions did not reach statistical significance and were removed from the model.

In sum, this section lays out the baseline model linking maternal education, parenting, and children's achievement trajectories during elementary school and carried out the first aim of the study. In other words, it provides empirical evidence that the associations between mothers' and children's educational pathways are driven, in part, by mothers' parental investment behaviors. The next section (Chapter 5) brings in mothers'

marital histories and builds toward the model depicted in Figure 2.2 Chapter 6 then turns to an exploration of mothers' work experiences.

Table 4.1. Zero-Order Model Estimates between Maternal Education and Children's Learning Factors

	B (SE)		
	Reading		Math
	Intercept	Slope	Intercept
Maternal Education			
Less than high school	-12.01***	-9.47***	-7.65***
	(2.95)	(.65)	(1.42)
Some college	6.29***	.58	2.06*
	(2.00)	(.43)	(.96)
College degree	13.62***	1.35***	8.55***
	(2.14)	(.49)	(1.03)
Post-graduate schooling	14.90***	2.08***	9.99***
	(2.36)	(.54)	(1.14)
Other Model Estimates			
Intercept	---	-.15***	---
		(.01)	
Residual Variance	407.71***	12.60***	101.94***
	(28.66)	(1.87)	(5.24)
Model Constant	446.17***	90.03***	466.58***
	(1.59)	(6.48)	(.81)

Note: High school is the reference category.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table 4.2. Unstandardized and Standardized Factor Loadings for Final Model

	Factor Loadings	
	Unstandardized	Standardized
Parenting Before Elementary School		
Home environment	1.00	.65
Parental involvement in kindergarten	2.72	.42
Maternal sensitivity	4.13	.61
Maternal stimulation	3.59	.60
Parenting During First Grade		
Maternal sensitivity	1.00	.82
Parental encouragement of schooling	.18	.44
Maternal stimulation	.91	.90
Maternal beliefs about parenting and education (r)	.42	.56
Correlation between Factor 1 and Factor 2		.90

Note: All parameter estimates significant at $p < .001$. r = reverse coded.

Table 4.3. Standardized Path Model Parameter Estimates of Model Linking Maternal Education, Parenting, and Latent Factors of Children's Achievement (Baseline Model)

	Standardized *B* (*SE*)				
	Maternal Parenting		Child Achievement		
	Parenting Pre-School	Parenting First Grade	Reading Intercept [1]	Reading Slope [1]	Math Intercept [2]
Maternal Education	.20****	.27****	.06	.06	.05
	(.04)	(.04)	(.05)	(.05)	(.05)
Parenting					
Pre-school	---	---	.49***	---	.59***
			(.18)		(.18)
First grade	---	---	-.20	.19***	-.20
			(.12)	(.05)	(.12)
Child Characteristics					
Male (female)	.06***	.10***	.02	.06*	.16***
	(.02)	(.13)	(.03)	(.03)	(.03)
Black (white)	-.18***	-.27***	-.01	-.08	-.12**
	(.03)	(.03)	(.04)	(.04)	(.04)
Other race/ethnicity	-.09***	-.11***	.01	.00	.05+
	(.03)	(.03)	(.03)	(.03)	(.03)
Child cognitive skills	.01***	.09**	.37***	.01	.21***
	(.01)	(.03)	(.04)	(.05)	(.04)
Behavior problems	-.01***	-.04	-.04	.05	.02
	(.01)	(.03)	(.04)	(.03)	(.03)
Mother Characteristics					
Mother's age	.11***	.08*	-.12**	.06	-.00
	(.03)	(.03)	(.04)	(.04)	(.04)
Mother's depression	-.03**	-.01	.02	.01	.06+
	(.10)	(.03)	(.04)	(.03)	(.04)
Agreeable personality	.06*	.11***	.01	-.07+	-.02
	(.03)	(.03)	(.04)	(.03)	(.03)
Outgoing personality	.07**	.01	-.09*	.01	-.05
	(.03)	(.03)	(.04)	(.03)	(.03)
Mother PPVT	.20***	.12***	-.05	.08*	.14***
	(.03)	(.13)	(.05)	(.04)	(.04)
Part-time employment	.03	-.01	.07+	---	.08*
	(.03)	(.03)	(.04)		(.03)
Full-time employment	-.04	-.04	.07+	---	.09**
	(.03)	(.03)	(.04)		(.04)
Spells of employment	---	---	---	.05	---
				(.03)	
Family Characteristics					
Poor at birth	-.14*	-.15*	.00	.00	.09*
	(.03)	(.49)	(.04)	(.04)	(.04)
Father college degree	.08*	.08*	.00	-.02	.05
	(.04)	(.03)	(.04)	(.04)	(.04)
Income-to-Needs	.04	.01	.02	-.03	.02
	(.03)	(.03)	(.04)	(.04)	(.04)
Children in home	-.03**	-.06*	.02	.03	.04
	(.01)	(.03)	(.04)	(.03)	(.03)
Other Covariates					
Classroom quality	---	---	-.01	.03	-.04
			(.03)	(.03)	(.03)

Notes: [a] Variables are time specific. For example, income-to-needs at first grade predicts first grade parenting and achievement intercept. A summary measure of income-to-needs predicts the achievement slope. [1] Model fit statistics: χ^2 = 714.79; *df* = 264; *p* = .00; *CFI* = .93; *RMSEA* = .04. [2] Coefficients for variables predicting maternal parenting (not shown above) identical to those in reading model to the hundredth. Model fit statistics: χ^2 = 713.40; *df* = 230; *p* = .00; *CFI* = .92; *RMSEA* = .04. + *p* < 0.10. *p < 0.05. **p < 0.01. *** *p* < .001

CHAPTER FIVE:

Examining the Intersection of Mothers' Marital and Educational Pathways

Having established the importance of parental investments for child achievement and the mediating significance of these investments in the link between mothers' and children's education, the next step in the analysis is to bring in mothers' marital histories. Specifically, this step will consider the association between family structure and the same set of parenting measures (i.e., the two parenting factors) described in the previous chapter. Then, interactions between maternal education and the marriage variables will determine whether the importance of marriage for parenting and child achievement varies by mothers' education. In other words, this step will test the hypotheses stated in Chapter 2. These steps are described in more detail below. But first, this analysis aim begins by presenting a descriptive picture of how mothers' marital histories align with mothers' education.

Descriptive Results

The descriptive results that appear in Table 5.1 paint a familiar picture. Specifically, women with more schooling are also more likely to be married to biological father at the time of birth and to remain stably married. For example, among women with a post-secondary degree (or 16 years of schooling), fewer than 4 % were unmarried at the time of birth and less than 10 % experienced a family structure change. Conversely, women with fewer years of schooling are more likely to be unmarried at the time of birth.

Among women with less than twelve years of schooling, only 38 % percent were married at the time of birth. This was true for 54 % of the women in the sample with high school degrees. Additionally, women with less education were also substantially more likely to experience a change in family structure. This pattern held true, even among women that were married at the time of birth (i.e., divorce).

These descriptive statistics support a well-established phenomenon, where for women in the U.S., the advantages associated with higher education and marriage appear to go hand in hand. What this study adds is a consideration of how these two demographic processes intersect to shape family life and children's early achievement. For example, does maternal education magnify the advantages that mothers' marital experiences bring, or buffer against disadvantages associated with family structure change? This next step in the study teases out such questions.

Adding Marriage Main Effects and Interactions to the Baseline Model

This analysis step begins by adding the family structure variables to the model as direct and indirect (via parenting) predictors of children learning. Because I am interested in how maternal education moderates the effect of family structure, however, indirect effects are not reported. As a second step, the family structure measures are then interacted with the measures of mothers' education. The results from the first modeling step, estimating the main effect of family structure, and the fully interacted model are presented in Table 5.2

Model 1 represents the model for the longitudinal measure of mothers' marriage to the biological father and the stability of this marriage. Adding this measure as a main

effect to the baseline model reveals a statistically significant association with the 54 month parenting factor (B = .14, SE = .03, p <. 001) and a marginally significant association with the first grade parenting factor (B = .05, SE = .03, p < .07). Next, interacting this set of marriage variables with education yields statistically significant negative interactions which suggest that, across both time points, the significance of marriage for parenting may be less for women with more years of schooling than it is for women with fewer years of schooling. Graphing these interactions at different values of schooling, the pattern of results that appears in Graphs 5.1 and 5.2 provides support for this interpretation. Specifically, compared to other family forms, stable marriages to the biological father offers a substantial boost for mothers with less education, while this boost was less pronounced among women with more education, and in fact, may be non-significant. What this pattern of results ultimately means for children's achievement (and the relative significance of different family structures at higher values of schooling) will be assessed by calculating the conditional indirect effect, explained shortly.

Model 2 looks at family structure instability. Following the same procedure, family structure change during early childhood (i.e., between birth and 54 months) was negatively associated with mothers' parenting during the time immediately before the start of schooling. Instability during the school transition did not have a statistically significant impact on parenting, although this coefficient did reach marginal significance. Interacting the two measures of family instability with education revealed a statistically significant positive interaction for instability during early childhood and education predicting parenting before the start of formal schooling. This interaction suggests that

the negative consequences of instability for parenting before children transition into formal schooling may be less among women with more education than it is for women with less education. Again, graphing this interaction (Graph 5.3) provides additional insight into this pattern of results. The non-significant interaction between the school transition measure of instability and maternal education suggests that the family structure differences reported above for this time period may be driven by women that were not married, rather than those who experienced a family structure change.

This investigation of family structure instability was repeated among women married at the time of birth in Model 3. The model result reveals a similar pattern of results (Graph 5.4), and provides evidence that the results for Models 1 and 2 were not driven solely by mothers who were single at the time of the focal child's birth. They also provide support for the idea stated about instability; that the greatest difference in parenting at first grade is between mothers' that were stably married and those that were single and, quite likely, unmarried at the time of the child's birth.

As a final step, the conditional indirect effect was calculated, which links the patterns described above to children's achievement. These estimates appear in Table 5.3 and reveal that for women with college degrees, neither marriage nor instability across the early childhood stage of development has significant positive or negative implications for their children's math or reading skills at the start of school. Among women without college degrees, marriage provided their children an academic boost, which decreased as women's time in the education system increased. For instability, the opposite was true. Instability was disruptive to parenting, especially for women with the least amount of

education. As for the development of children's reading skills across elementary school, maternal education only seemed to differentiate among mothers who continued to be stably married to the biological father when the child was in at first grade. Thus, education, particularly among women with some college experience, helped make up for the disadvantage associated with unmarried or unstable family structures. Looked at a different way, marriage helped narrow differences in children's reading slopes for mothers with high school degrees or less.

Table 5.1 Bivariate Associations between Marriage Variables and Maternal Education

	Percentile				
	Less than High School	High School Degree	Some College	College Degree	Post-Graduate
Married to bio dad at birth	38 %	54 %	76 %	96 %	97 %
Stably married to bio dad through 54 months	25 %	46 %	65 %	89 %	91 %
Stably married to bio dad 54 months – first grade	22 %	42 %	60 %	84 %	86 %
Any family structure change birth – 54 months	42 %	37 %	25 %	9 %	7 %
Any family structure change 54 months – first grade	23 %	14 %	15 %	7 %	7 %
Divorce birth – 54 months*	34 %	22 %	15 %	7 %	7 %
Divorce 54 months – first grade*	10 %	15 %	7 %	4 %	4 %

*Presented for subsample of mothers that were married to biological father at the time of birth. Note, only 77 % of mothers were married to a non-biological partner at the time of the focal child's birth.

Table 5.2. Standardized Path Model Parameter Estimates of Maternal Education and Family Structure Variables Predicting Parenting

	Standardized *B* (*SE*)			
	Main Effects		Main Effects & Interactions	
	Parenting Pre-School	Parenting First Grade	Parenting Pre-School	Parenting First Grade
Model 1: Stably Married to Biological Father				
Maternal education	.18*** (.04)	.27*** (.04)	.33*** (.06)	.36*** (.06)
Married to bio dad 54 months	.14*** (.03)	---	.69*** (.18)	---
Married to bio dad first grade	---	.05+ (.03)	---	.40* (.16)
Education x married 54 months	---	---	-.61*** (.20)	---
Education x married first grade	---	---	---	-.39* (.18)
Model 2: Family Structure Instability				
Maternal education	.19*** (.04)	.27*** (.04)	.15** (.04)	.26*** (.04)
Maternal education	-.12*** (.03)	---	-.60*** (.15)	---
Instability birth – 54 mo.	---	-.05+ (.03)	---	-.15 (.14)
Instability 54 months – first grade	---	---	.43** (.15)	---
Education x instability birth – 54 mo	---	---	---	.11 (.15)
Education x instability 54 mo – first grade				
Model 3: Divorce among Mothers Married to Biological Father at Birth				
Maternal education	.20*** (.05)	.28*** (.05)	.17*** (.05)	.28*** (.05)
Divorce from bio dad birth – 54 mo	-.11** (.04)	---	-.74** (.23)	---
Divorce from bio dad 54 – first grade	---	-.05 (.03)	---	-.16 (.20)
Education x divorce birth – 54 mo	---	---	.63** (.23)	---
Education x divorce mo – first grade	---	---	---	.12 (.20)

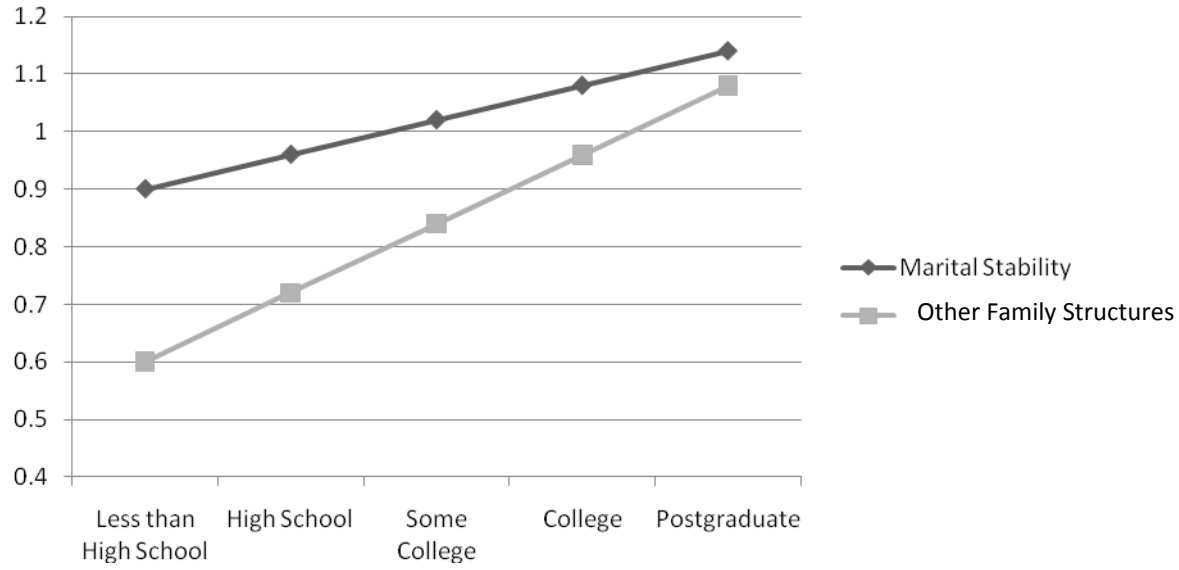
Notes: Model accounts for all paths, including the associations between the independent variables, covariates, and mediators with the achievement slope and intercept.
*$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table 5.3 Point Estimates of Conditional Indirect Effects

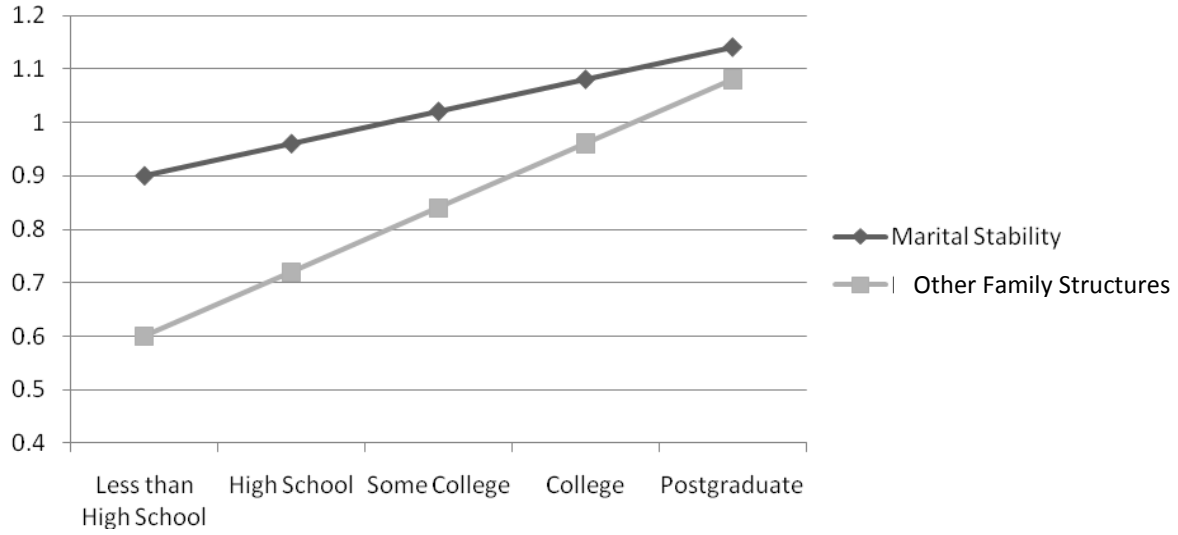
	b (SE)		
	Reading Intercept	Reading Slope	Math Intercept
Marital Stability			
Less than high school	7.01*	.29*	4.37**
	(2.84)	(.14)	(1.42)
High school degree	5.03*	.20*	3.15**
	(2.03)	(.09)	(1.03)
Some college	3.06*	.10	1.93**
	(1.35)	(.07)	(.73)
College degree	1.08	.03	.71
	(1.09)	(.08)	(.66)
Post graduate	-.90	-.09	-.54
	(1.46)	(.12)	(.87)
Instability			
Less than high school	-5.78*	-.21	-3.82**
	(2.55)	(.14)	(1.35)
High school degree	-4.15*	-.17+	-2.76**
	(1.81)	(.10)	(.95)
Some college	-2.53*	-.12	-1.70*
	(1.21)	(.08)	(.68)
College degree	-.91	-.08	-.64
	(1.08)	(.11)	(.70)
Post graduate	.72	-.03	.42
	(1.53)	(.16)	(1.00)
Divorce from Biological Dad			
Less than high school	-6.45+	-.15	-3.77*
	(3.40)	(.13)	(1.69)
High school degree	-4.35+	-.12	-2.56*
	(2.27)	(.10)	(1.29)
Some college	-2.26+	-.09	-1.33+
	(1.37)	(.07)	(.69)
College degree	-.17	-.06	-.11
	(1.22)	(.08)	(.71)
Post graduate	1.93	-.03	1.11
	(2.06)	(.12)	(1.70)

Notes: Point estimates calculated by product of coefficient method.
*$p < 0.05$. **$p < 0.01$. *** $p < .001$

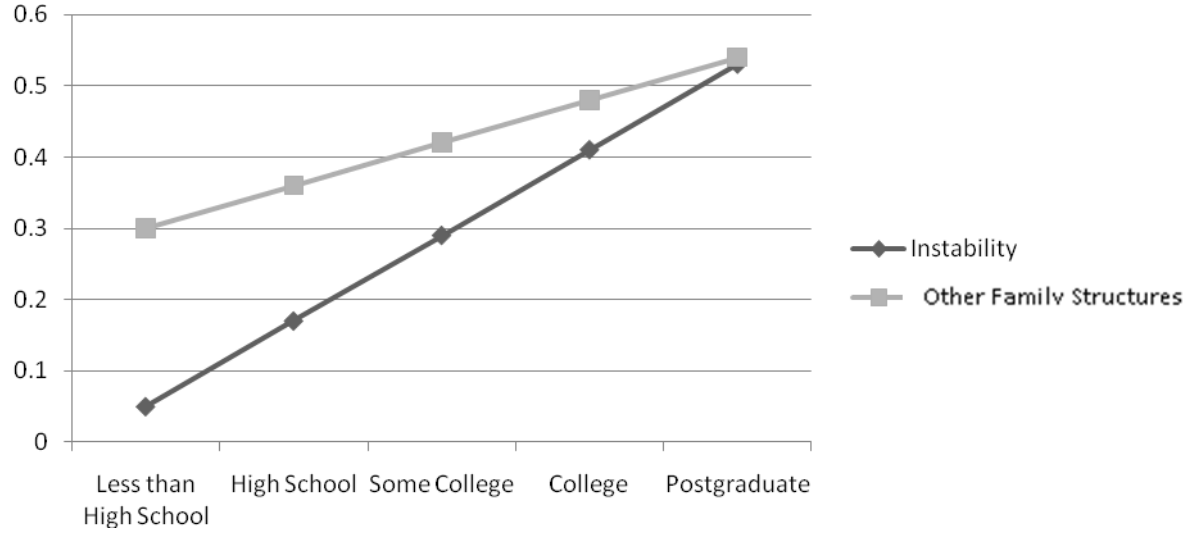
Graph 5.1. Marital Stability Birth – 54 Months Predicting 54 Month Parenting by Maternal Education



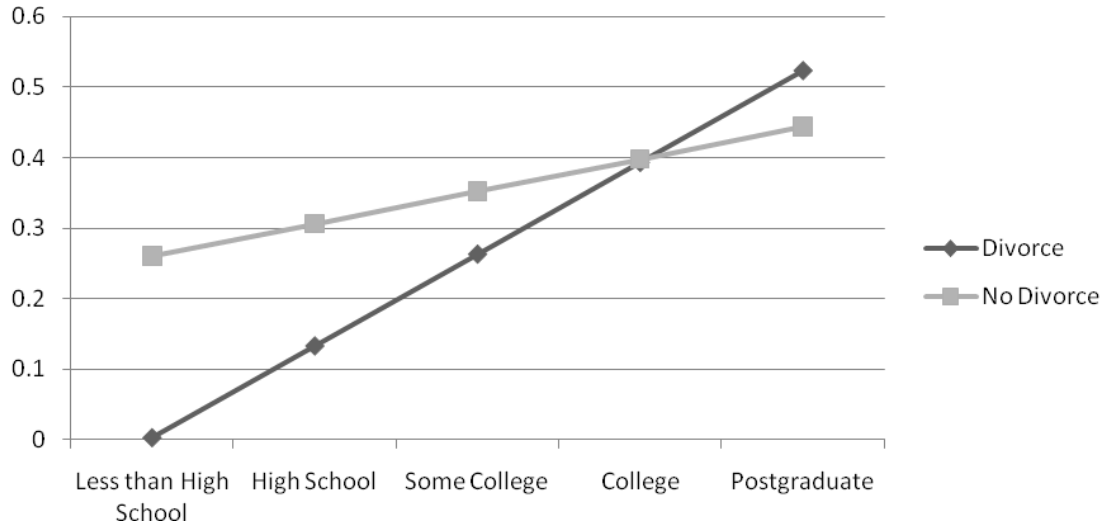
Graph 5.2. Marital Stability 54 Months – Grade 1 Predicting First Grade Parenting by Maternal Education



Graph 5.3. Family Structure Instability Birth – 54 Months Predicting 54 Month Parenting by Maternal Education



Graph 5.4. Divorce Birth – 54 Months Predicting 54 Month Parenting by Maternal Education



CHAPTER SIX:

Examining the Intersection of Mothers' Employment and Educational Pathways

The next study aim concerns how maternal employment and education combine to shape parenting and children's early achievement. Analysis of this study aim began by building on the model described in Chapter 4 (refer back to Figure 3.1) and followed the same modeling steps described in the previous chapter. For this analysis, mothers' labor force participation (differentiated by part-time and full-time work in a contemporaneous context; differentiated by being stably employed, intermittently employed, or never employed in a historical context) is the study variable that represents labor force participation. Going beyond general measures of labor force participation, this aim also considers qualitative aspects of mothers work, specifically occupational prestige (high prestige, lower prestige) and schedule (standard or non-standard hours). As with employment status, these measures are conceptualized in a contemporaneous context and a longitudinal context (e.g., ever worked a high prestige job).

This analysis aim also includes a supplementary analysis that was not originally included as part of the original analysis plan. This supplementary analysis was included because the model, as it was originally conceived, revealed modest insights into how education and employment combine to shape parenting and children's early achievement trajectories. One explanation for this pattern of results is that in some cases, employment may influence specific dimensions of parenting, but not the holistic notion of parenting

that was conceptualized in this study. A second explanation is that the association between employment and specific dimensions of parenting may not always follow in the same direction. For example, full-time work may be positively associated with the quality of the home environment but may be negatively associated with parental involvement in school. These possibilities are addressed by focusing the analysis on the association between the different measures of mothers' work employed in this study (and their interactions with maternal education) and the individual dimensions of parenting.

These supplementary analyses, as well as the results from the originally proposed sets of analyses are described below. As a starting point, like Chapter 5, this chapter begins by presenting a descriptive picture of how mothers' employment varies with mothers' education.

Descriptive Results

The descriptive results presented in Table 6.1 summarize mothers' work experiences by her education. The results for mothers' work status echo findings that appear in my prior work (see Augustine et al. 2009). Specifically, women with more education are more likely to be engaged in both part-time and full-time work while women with less education are more likely to be out of the paid labor force. This trend is consistent across both time points (i.e., 54 months and first grade). As for nonstandard work, a clear pattern did not appear, but rather, it appears that nonstandard work is equally common among women with both higher and lower levels of education (although one noteworthy finding was that only 3 percent of the most educated mothers worked nonstandard hours at 54 months). Not surprisingly, education was also associated with a

greater likelihood of working in a higher prestige job, although a significant proportion of more educated mothers also worked lower prestige jobs. The inverse, however, was not true for less educated mothers. In particular, among women without college experience, very few worked in a higher status job (roughly 5 percent combined; among working mothers, roughly ten percent combined were in higher status jobs).

When considered longitudinally, however, a much larger proportion of less educated mothers reported some experience working a high prestige job. For example, at 54 months, 55 % of women without high school degrees reported being employed in a higher prestige job during at least one of the major data collection waves. At the same time, this group, compared with women who have more schooling, was also much more likely to have only worked in lower status jobs. As for nonstandard hours, the same pattern reported above appeared when considered across time. Turning to the stability of mothers' labor force participation, what seemed to differentiate this trend was whether or not a woman held a high school degree. For example, only 8 % of women with less than a high school degree worked continuously from the time the child was one-year-old to the time he was 54 months old. This number ranges from 28 – 32 for all other mothers. Finally, among women with high school degrees, roughly equal proportions returned to work at some point the first year after the focal child's birth (range = 48 – 54 %). As for mothers without a high school degree, far fewer returned to work during this time (29 %).

Adding Employment Main Effects and Interactions to the Baseline Model

As with the analysis presented in Chapter 5, this analysis step begins by adding the employment status variables to the model as direct and indirect (via parenting)

predictors of children learning. These employment measures are then interacted with the measure with mothers' education. The results presented here are for mothers' labor force participation and occupational prestige. Results for models that include measures for non-standard work or employment during the first year of birth are not presented. Note that models including the marker for mothers' employment during the first year of birth excluded covariates for child temperament and secure attachment, as these could represent important mechanisms (Brooks-Gunn, Han, and Waldfogel 2010). These models tested a total of 20 interaction terms between maternal education and work characteristics (16 for the non-standard work models, 8 per time point, and 4 for the year-one employment models). None of these interactions reached statistical significance. These nulls findings are followed up by a supplementary analysis that breaks the parenting factor into its component measures (mentioned above). This analysis will be explained in more detail shortly.

Focusing on maternal work status and prestige, Table 6.2 presents the results from the first modeling step, estimating the main effect of maternal work status, and as a second step, the fully interacted model with maternal education. Model 1 looks at mothers' current employment status, coded into not working, part-time work, and full-time work. The results from this model reveal no statistically significant impact of mothers' work status, either before the start of school, or once children begin formal schooling, on her parenting. Interacting these employment measures with maternal education yields a statistically interaction between part-time work at 54 months (compared to no work) and mothers' parenting around the same time. This significant

interaction suggests how the association between work status and parenting might vary for women of different educational backgrounds. Model 2 adds the longitudinal measure of mothers' employment, focusing on the potential benefits associated with being stably connected to the labor market. This model did not reveal a statistically significant interaction. Rerunning the model with a longitudinal measure for full-time work (rather than any work) did not change this pattern of results.

Graphing the statistically significant interactions between maternal employment and education that appear in Model 1 at different values of schooling, the graph in Graph 6.1 suggests that, among women working part-time, education did little to differentiate mother's parenting. In other words, maternal education differences in parenting were narrowed among those working part-time work. Among women working full-time or not-working, however, increases in education were associated with greater levels of parenting. Moreover, for mothers with less education, full-time work (compared to other work statuses) seemed to disrupt parenting. This pattern did not appear among women with more education, suggesting how education helped buffer against the parenting disadvantages associated with both full-time work (e.g., less time) and non-employment (e.g., less connection to social networks).

Table 6.3 considers the focal model within the context of mothers' occupational prestige. Model 1 explores how maternal education shapes how lower and higher prestige work at 54 months and first grade (compared to no work) influence parenting at the same time points. This model initially revealed a non-significant association between occupational prestige and parenting. Interacting these measures with maternal education,

however, suggests that the association between work status and parenting might vary by maternal education. Indeed, statistically significant interactions between occupational prestige and maternal education were detected at both 54 months and first grade. Again, graphing these interaction terms at different values of education, Graph 6.2 examines the association between occupational prestige at 54 months and 54 month/kindergarten parenting by maternal education. Graph 6.3 examines the association between occupation prestige at first grade and first parenting by maternal education. Both graphs reveal the same pattern of results. Maternal education only modestly differentiated parenting among women in high status work. Rather, high status jobs may help narrow maternal education differences in parental investment. However, for women in low status work or not working at all, education seemed to buffer against any negative consequences such employment circumstances might have for parenting. This was not true for women with less education, for whom the disruptions to parenting associated by this type of work (compared to high status work and being out of the labor force) were not blunted.

Model 2 considers women's employment histories and whether they ever experienced a higher prestige job, worked exclusively in lower status jobs, or never worked. These different employment measures were not significantly associated with parenting. Adding interactions with maternal education, once again, suggested the possibility that the importance of occupational prestige for parenting may be different for women with different educational experiences. Unfortunately, graphing these interactions at different values of education revealed an inconsistent, and somewhat perplexing, pattern. In Graph 6.4, education seems to differentiate women who only worked lower

prestige jobs. For women who had never worked or had experienced a higher prestige at one time or another, increases in education were associated with modest increases in parenting. For first grade parenting (see Graph 6.5), education did the least to distinguish women who had worked exclusively in low status work, compared to having never worked or worked at least once in a higher status job. The supplementary analyses that follow will investigate these incongruous findings further.

As a final step, the conditional indirect effect was calculated, which links the patterns described above to children's achievement. These estimates are a little unwieldy, given that the results were re-estimated using different reference groups, and therefore, are reported in the text. For work status at 54 months, results from the conditional indirect effect reveal how for women with less education, part-time work (versus no work) boosted children's achievement intercepts. Specifically, part-time work was positively associated with increases in children's Letter Word and Applied Problems intercepts among mothers with high school degrees or less. Among women in full-time work (compared to part-time and no work), mothers' education neither widened nor narrowed maternal education differences in children's learning. As for occupational prestige, the same pattern held true among mothers with high school degrees or less that worked in high status jobs at 54 months and first grade. However, these women represent a very small, and perhaps select, group. Thus, the extent to which the general pattern of results reported in the previous section (which includes women with some college experience but did not complete a college degree) extends to children's achievement should be interpreted with caution. Among women in lower prestige work (compared to

higher prestige work), mothers' education neither widened nor narrowed maternal education differences in children's achievement trajectories.

Supplementary Analysis

The supplementary analysis focuses on the first piece of the conceptual and analytical model linking mothers' life course pathways with her parenting behaviors. By modeling individual parenting behaviors, rather than a latent parenting construct, this analysis is intended to provide insights that the model presented above may have obscured. For example, non-standard work may only influence specific dimensions of parenting. These models focus on the association between 1) employment and the four parenting measures included in the 54 months/kindergarten parenting factor (the home environment, maternal warmth, cognitive stimulation, and teacher reported school involvement) and between 2) employment and the four parenting measures included in the first grade parenting factor (parenting philosophy, maternal warmth, cognitive stimulation, and school involvement). In addition, mother reports of school involvement at both kindergarten and first grade are included in the supplemental analysis.

For the first supplemental analysis, a total of 65 models were estimated. The results from these models will be summarized here. Model coefficients are presented in an Appendix (Tables A1-A8). In general, these results provided few insights, above and beyond the models just described. For example, the interaction between maternal employment and non-standard work (at both 54 months and first grade, including a count measure that assessed mothers' time in nonstandard employment) was never a significant predictor of any of the ten parenting variables included in this supplemental analysis. The

only interaction term to reach statistical significance at the $p < .05$ level (aside from those associated with work status at 54 months and occupational prestige) was mothers' employment during the first year following the focal child's birth, predicting teacher reported school involvement at first grade ($b = -.25$, $SE = .06$, $p < .001$). This result (which appears in Table A7) suggests that employment during the first year after the child's birth is associated with greater levels of teacher reported school involvement among women with less education. Yet the same pattern was not found for mother reported school involvement. Thus, it is possible that this particular measure is actually a proxy for current employment. Side analyses provide support for this possibility. Specifically, for mothers who had worked during the first year after birth, over 68 % were also working when children were in first grade.

As for the pattern of results that appear in Table 6.3, Model 2, reported above, the supplemental analysis echoes the pattern associated with mothers' 54 month and kindergarten parenting (Table A7). The pattern associated with mothers' first grade parenting was different, however, and in fact, none of the ten interaction terms predicting parenting were statistically significant. Although the factor measure of parenting provides more power to detect a statically significant result, the conclusion here must be that the results presented in Table 6.3 should be interpreted with caution.

Table 6.1 Bivariate Associations between Employment Variables and Maternal Education

	Percentile				
	Less than High School	High School Degree	Some College	College Degree	Post-Graduate
Contemporaneous Measures 54 Months					
Not working 54 months	55 %	37 %	32 %	34 %	27 %
Part-time 54 months	11 %	20 %	18 %	24 %	26 %
Full-time 54 months	34 %	44 %	51 %	42 %	47 %
Non-standard hours 54 months	10 %	13 %	14 %	14 %	3 %
Executive work 54 months	2 %	3 %	16 %	42 %	65 %
Lower status work 54 months	43 %	60 %	55 %	24 %	8 %
Contemporaneous Measures First Grade					
Not working first grade	44 %	22 %	30 %	30 %	23 %
Part-time first grade	11 %	21 %	17 %	26 %	29 %
Full-time first grade	45 %	57 %	54 %	45 %	49 %
Non-standard first grade	14 %	19 %	21 %	21 %	22 %
Executive work first grade	2 %	7 %	16 %	45 %	67 %
Lower status work first grade	55 %	71 %	55 %	25 %	10 %
Longitudinal Measures Birth - 54 Months					
Never employed	9 %	11 %	9 %	12 %	9 %
Worked intermittently	83 %	61 %	60 %	55 %	61 %
Worked continuously	8 %	28 %	31 %	33 %	30 %
Worked executive job	54 %	57 %	60 %	84 %	89 %
Never worked executive job	37 %	32 %	28 %	4 %	2 %
Never non-standard hours	34 %	42 %	33 %	38 %	50 %
Longitudinal Measures Birth – First Grade					
Never employed	4 %	5 %	6 %	9 %	7 %
Worked intermittently	89 %	70 %	65 %	61 %	64 %
Worked continuously	8 %	26 %	29 %	30 %	29 %
Worked executive job	55 %	51 %	63 %	86 %	91 %
Never worked executive job	41 %	44 %	31 %	5 %	2 %
Never non-standard hours	37 %	38 %	30 %	37 %	42 %
Other Longitudinal Measures					
Employment First Year	29 %	48 %	53 %	49 %	51 %

Table 6.2. Standardized Path Model Parameter Estimates of Maternal Education and Maternal Labor Force Participation Predicting Parenting

	Standardized *B* (*SE*)			
	Main Effects		Main Effects & Interactions	
	Parenting Pre-School	Parenting First Grade	Parenting Pre-School	Parenting First Grade
Model 1: Labor Force Participation (contemporaneously)				
Maternal education	.19*** (.04)	.26*** (.04)	.27*** (.05)	.28*** (.06)
Part-time work 54 months	.04 (.03)	---	.61*** (.17)	---
Full-time work 54 months	-.02 (.03)	---	.19 (.17)	---
Part-time work first grade	---	-.00 (.03)	---	.16 (.18)
Full-time work first grade	---	-.03 (.03)	---	.02 (.18)
Part-time work 54 months x education	---	---	-.60** (.17)	---
Full-time work 54 months x education	---	---	-.21 (.17)	---
Part-time work first grade x education	---	---	---	-.17 (.19)
Full-time work first grade x education	---	---	---	-.05 (.18)
Model 2: Labor Force Participation (longitudinally)				
Maternal education	.19*** (.04)	.25*** (.04)	.28** (.10)	.27* (.14)
Part-time work 54 months	.00 (.05)	---	.22 (.30)	---
Full-time work 54 months	-.03 (.05)	---	.29 (.30)	---
Part-time work first grade	---	.02 (.06)	---	.01 (.40)
Full-time work first grade	---	-.01 (.06)	---	.08 (.40)
Part-time work 54 months x education	---	---	-.26 (.30)	---
Full-time work 54 months x education	---	---	-.29 (.20)	---
Part-time work first grade x education	---	---	---	-.02 (.40)
Full-time work first grade x education	---	---	---	-.07 (.40)

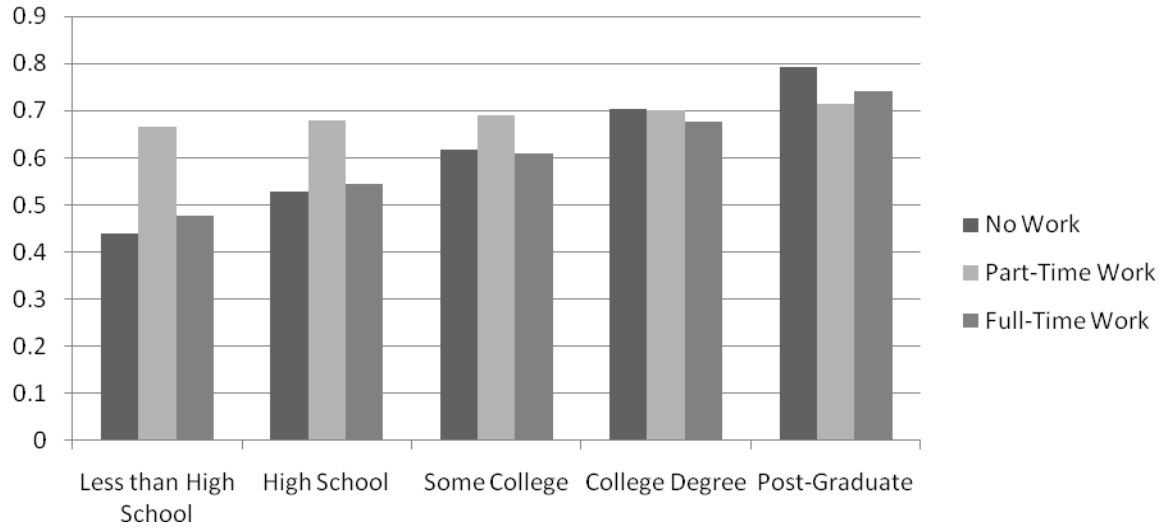
Notes: Model accounts for all paths, including the associations between the independent variables, covariates, and mediators with the achievement slope and intercept. Reference group for Model 1 is not working. Reference group for model two is never worked. [a] Measured between birth and 54 months. [b] Measured between birth and first grade. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table 6.3. Standardized Path Model Parameter Estimates of Maternal Education and Maternal Occupational Prestige Predicting Parenting

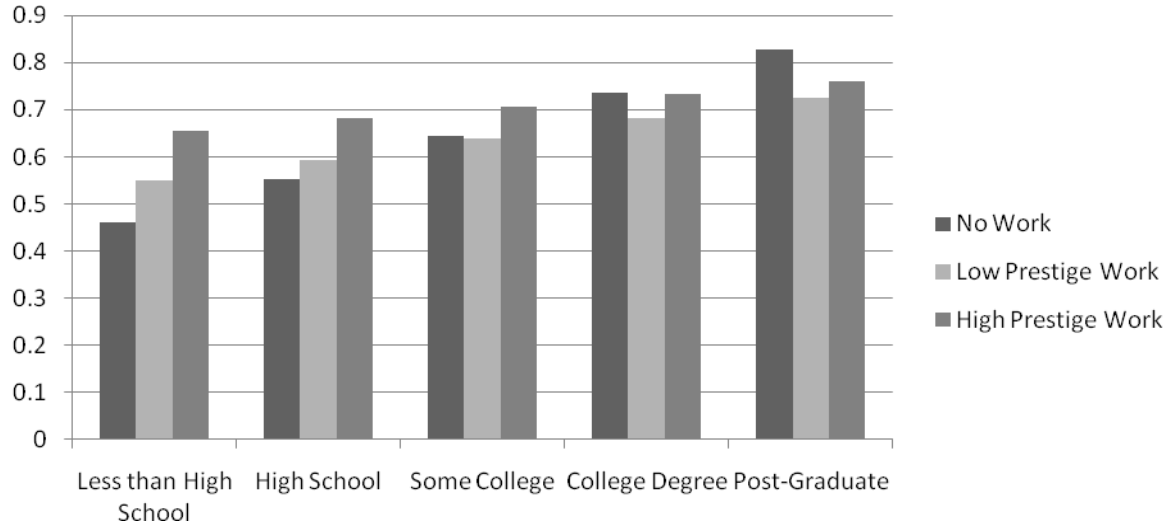
	Standardized *B* (*SE*)			
	Main Effects		Main Effects & Interactions	
	Parenting Pre-School	Parenting First Grade	Parenting Pre-School	Parenting First Grade
Model 1: Occupations Prestige (contemporaneously)				
Maternal education	.18** (.04)	.24*** (.04)	.28*** (.05)	.30*** (.16)
Lower prestige work 54 months	.00 (.03)	---	.40* (.19)	---
Higher prestige work 54 months	.03 (.03)	---	.56** (.21)	---
Lower prestige work first grade	---	-.04 (.03)	---	-.04 (.24)
Higher prestige work first grade	---	.02 (.02)	---	.54** (.21)
Lower work 54 months x education	---	---	-.39* (.18)	---
Higher work 54 months x education	---	---	-.59 (.22)	---
Lower work first grade x education	---	---	---	.01 (.09)
Higher work first grade x education	---	---	---	-.55* (.22)
Model 2: Occupational Prestige (longitudinally)				
Maternal education	.18*** (.04)	.24*** (.04)	.19* (.09)	.42*** (.09)
Always lower prestige work [a]	.00 (.03)	---	-.48* (.21)	.31 (.20)
Experienced higher prestige work [a]	.04 (.03)	---	.15 (.24)	.50* (.23)
Always lower prestige work [b]	---	-.00 (.03)		
Experienced higher prestige work [b]	---	.05 (.03)		
Always low prestige x education [a]	---	---	.50* (.21)	
Experienced high prestige x education [a]	---	---	-.12 (.28)	
Always low prestige x education [b]	---	---		-.31 (.21)
Experienced high prestige x education [b]	---	---		-.55* (.28)

Notes: Model accounts for all paths, including the associations between the independent variables, covariates, and mediators with the achievement slope and intercept. Reference group for Model 1 is not working. Reference group for model two is never worked. [a] Measured between birth and 54 months. [b] Measured between birth and first grade. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

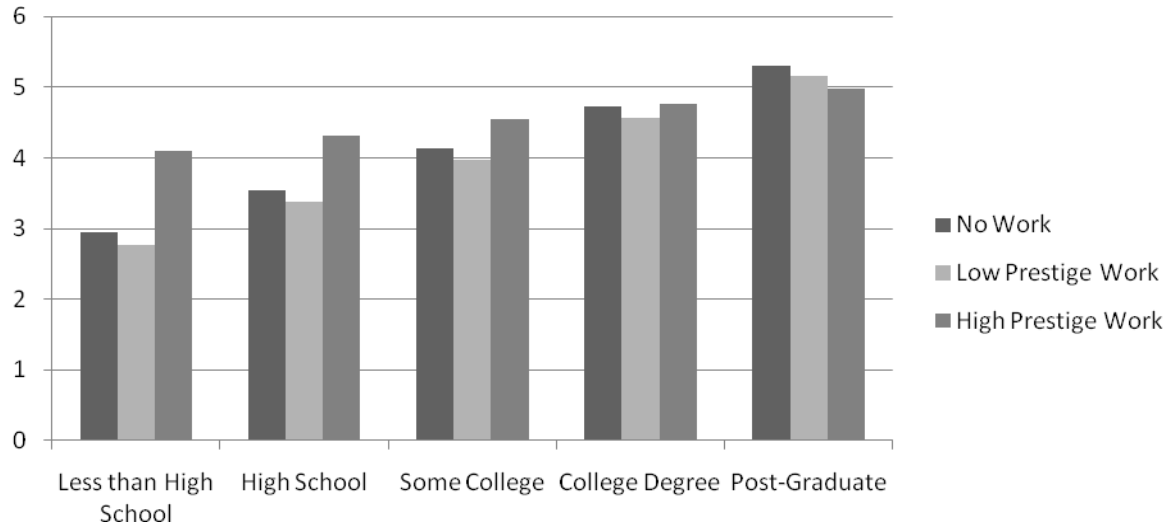
Graph 6.1. Maternal Labor Force Participation Status at 54 Months Predicting 54 Month / Kindergarten Parenting by Maternal Education



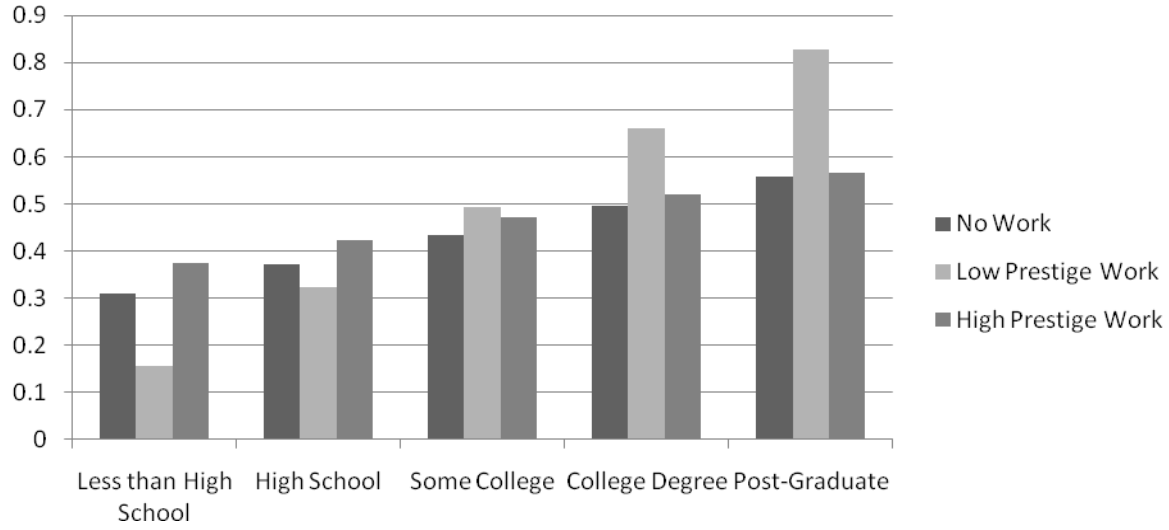
Graph 6.2. Occupational Prestige at 54 Months Predicting 54 Month / Kindergarten Parenting by Maternal Education



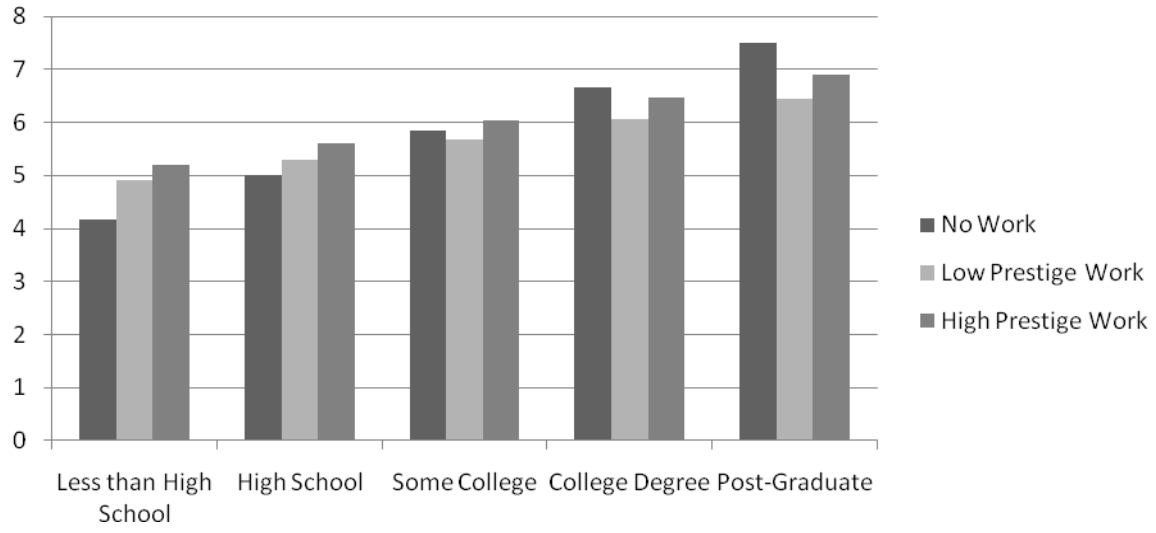
Graph 6.3. Occupational Prestige at First Grade Predicting First Grade Parenting by Maternal Education



Graph 6.4. Occupational Prestige from Birth to 54 Months Predicting 54 Month /Kindergarten Parenting by Maternal Education



Graph 6.5. Occupational Prestige from Birth to First Grade Predicting First Grade Parenting by Maternal Education



CHAPTER SEVEN:

Discussion

The goal of this dissertation study was to broaden and deepen our understanding of how advantages accrue to children through their mothers' education and give rise to socioeconomic disparities in children's early achievement. This question grows out of a long sociological tradition of stratification research concerned with how parents' socioeconomic characteristics, particularly their educational attainment, are linked to those of their children. What this dissertation study aims to do is provide both greater knowledge of this well-studied, but ever evolving process. It does so in several ways.

First, this dissertation focuses on mothers, who in comparison to fathers are less often the subject of stratification research. The focus on mothers' is broadly motivated by the ongoing rise in women's educational attainment. This trend suggests that the intergenerational transmission of advantage that has long defined the American class system now no longer flows predominantly through fathers, but increasingly through mothers as well (Beller 2009). Thus, while fathers' education plays an important role in their children's status attainment, this dissertation emphasizes the role of mothers' education, which, within the stratification literature, has received less attention (Blau and Duncan 1967; Featherman and Hauser 1978).

Of course, outside of the stratification literature, the significance of mothers' education for children's achievement (and other competencies) has been widely studied.

Researchers in developmental psychology and in the social capital tradition, in particular, have amassed a large literature delineating the ways that mothers' education conveys developmental advantages to their children (e.g., Coleman 1988; Kalil et al. 2011). Although this literature does not provide much theoretical insight into what it is about maternal education that promotes such advantages, it does provide important knowledge of the mechanisms that connect mothers' and children's education. According to this research, such mechanisms encompass a variety of parenting behaviors that, particularly during the early years of children's development, promote children's future educational prospects by facilitating their early academic development. This dissertation integrates this developmental/social capital perspective and focus on parenting in order to help explain the processes through which mothers' and children's education and status attainment pathways are linked.

At the same time, this dissertation aims to bring a theoretical understanding of why education is consistently associated with such parenting mechanisms. In order to develop this theoretical perspective, this dissertation draws on three sets of literatures. The first, which includes primarily research from economics, provide robust evidence that the importance of mothers' education for children's educational outcomes goes beyond economic explanations (e.g., Carniero et al. 2007; Neiss and Rowe 2000). The second literature draws on a wide array of empirical studies which evoke social psychological concepts that explain how education is associated with numerous psychosocial resources (e.g., social networks, coping and stress management skills, greater sense of personal control) that affect individual behavior and, as an extension,

how mothers manage their children's education (e.g., Mirowksy and Ross 2003; Schnittker 2004). The final literature has to do with the work of Lareau (2004) and that directly inspired by her notion of concerted cultivation (e.g., Bodovski and Farkas 2008; Cheadle 2008). This concept, although not explicitly concerned with maternal education (but rather, more broadly with social class), is useful because it highlights socioeconomic differences in how mothers' perceive their role as parents. As such, it conceptualizes the parenting behaviors associated with maternal education highlighted by developmental psychology/social capital research as elements of a parenting philosophy targeted toward giving their children a competitive advantage at school.

Tying these general linkages among maternal education, parental investment, and children's early achievement together both theoretically and empirically, this dissertation presents a model that provides a richer understanding of how differences in maternal education gives rise to socioeconomic disparities in children's early achievement. However, as stated above, this dissertation not only wants to deepen our knowledge of these linkages, but it also wants to broaden it. Therefore, this dissertation turns to the life course framework as a way of introducing the tremendous variability that exists in these linkages across subsets of the population (Elder 1998). Defining these subsets is aided by the life course perspective, which describes the interconnection among mothers' various life course pathways, and McLanahan's (2004) notion of diverging destinies, which suggests how specific life course pathways linked to mothers' education contribute to socioeconomic differences in children's achievement and the widening gap among families in the resources they have available to promote their children's development.

The life course pathways that are the focus of this dissertation are mothers' marital experiences and their experiences of paid labor.

Finally, in the spirit of the notion of diverging destinies, this dissertation study focuses on the stage of child development when children's academic trajectories begin to diverge, namely as children transition into and through elementary school. Therefore, in returning to the body of stratification literature that originally inspired this dissertation, this perspective casts light on the beginning stages of the intergenerational transmission of advantage and a time when, perhaps, policy initiates could help dampen this cycle for the next generation.

Maternal Education, Parenting, and Children's Achievement

The empirical analyses based on these ideas provides support for the study's core conceptual model, or the idea that what ties together mothers' and children's educational pathways are various parental investment behaviors that represent an underlying orientation to parenting. This "latent" notion of parenting was captured by confirmatory factor analysis while mediation tests provided evidence that the parenting behaviors hypothesized (and shown) to promote children's achievement trajectories formed a statistically significant link between mothers' education and children's education. Specifically, parenting before the transition into formal schooling was associated with children's achievement intercepts and parenting at the start of schooling was associated with their slopes (although only for Letter Word Scores because the slope Applied Problems did not significantly vary). Maternal education proved to be a strong predictor of parenting at both time points.

Building upon this core model was the second and third aims of the dissertation. The guiding idea behind these aims was that maternal education operates two ways. First, as explained above, by predicting the parenting behaviors that promote children's learning. The second way was by moderating the influence of other life course factors that might also influence such parenting behaviors.

Family Structure and Children's Diverging Destinies

The first life course factor under investigation in this study was mothers' marital pathways. The results from this study revealed how being stably married to the biological father was significantly associated with both parenting factors, but that the strength of this association was lower among women who had more years of schooling. This finding supported the hypothesis informed by the resource substitution perspective. Specifically, the benefits of marriage among women with less education were greater compared to women with more education, for whom many of these benefits were already in place. For children of women with less education, these benefits extended to their achievement, which received a significant boost. This finding suggests some refinement to the diverging destinies concept, which does not explore the possibility of resource substitution in the case of mothers' marriage.

Looking at family structure and marriage from a different viewpoint, however, findings also supported a cumulative advantage perspective. The descriptive findings echoed a well-established pattern, where women with less education (compared to women with more education) were more likely to be unmarried at the time of the focal child's birth as well as experience a family structure change. The multivariate results

suggested that these family structure pathways were also more negatively associated with parenting among women with less education than it was for women at higher levels of schooling, a pattern which extended to children's achievement. Thus, applying the population-level lens adopted by McLanahan, these results provide support for the notion of diverging destinies. They also highlight how education, and the associated psychosocial resources, helped buffer against the potentially negative impact of such circumstances. These patterns, overall, appear stronger during the period of early child as predictors of mothers' pre-school transition parenting (Cavanagh and Huston 2008).

An important limitation of this aim 2 study was the inability to present more nuanced measures of mothers' marital trajectories. Although the focus of this study was on the marital pathway most closely tied to mothers' education—being stably married to the biological father—it is certainly true that women at the both low and high ranges of the educational spectrum are experiencing increases in family structure variability. This diversity goes beyond the measure of divorce or family structure change employed in this study. In order to pursue this question, however, a larger and more economically diverse sample (for example, the Fragile Families and Child Wellbeing Study) is required.

Maternal Employment and Children's Diverging Destinies

The second life course pathway under investigation in this dissertation is mothers' employment. Longitudinal measures were included to mirror the life course perspective applied to the measures of family structure. Contemporaneous measures were also included. These measures were included because mothers' employment, in comparison to marriage, was much more variable. For example, mothers often cycled in and out of paid

labor, or between different types of jobs or employment statues. In the case of mothers' marriage, the majority experienced one union type. Among those who experienced a family structure change, one change was the modal category. Moreover, parenting may be much more resilient to changes in employment (e.g., exiting the paid labor force) than it is to changes in family structure (e.g., divorce).

Focusing on different characteristics of employment, mothers' work status (part-time/full-time) was, on average, not significantly associated with parenting among the full-sample, but this is because it significantly varied depending on women's education. In particular, part-time work before the start of schooling has the greatest (positive) implications for parenting, and children's achievement, among women with less education. This finding supports a resource substitution viewpoint, although less educated women, compared to more educated women, are less often employed in such part-time positions. As with the finding about family structure instability, this perspective is consistent with the notion of diverging destines but also suggests some refinement to the concept that differentiates between the population level perspective (i.e., the idea that employment is more common among more educated women) and the individual level perspective (i.e., the finding that certain employment statuses can have larger positive implications for mothers with less education). Alternatively, the impact of full-time work (compared to part-time work) on parenting was associated with diminished parenting among less educated women, but not more educated women. This finding, however, did not carry through to children's achievement but did provide evidence for how education buffered against disruptions to parenting associated with full-time work.

A similar pattern was found for occupational prestige, although for both 54 month and first grade measures. In particular, occupational status (low or high) was not significantly associated with parenting in the full-sample, but it significantly varied depending on women's education. Specifically, higher status work was associated with greater increases in parental investment among women with less education than among women with more education. This finding also supports a resource substitution perspective, although I must acknowledge that high prestige work was also rare among less educated mothers. Lower status work (compared to higher status work), on the other hand, was associated with less parental investment among women with lower levels of education, but this was not the case for women with more years of schooling. This pattern was also observed for women who were not working, and therefore, did not receive the benefits of work. These results did not carry through to children's achievement, but similar to full-time work, provided evidence for how education buffered against disruptions to parenting associated with low status work and helped make up for some of the resources unavailable to those mothers not in the paid labor force.

In addition, statistically significant findings were reported for models estimating the interaction between maternal education and mothers' exposure to any high status work or consistent employment in lower status work. These results revealed inconsistent findings across the two time points (54 months and first grade), and therefore, will be interpreted with caution. The results from this study aim did not find that non-standard work (either in the present or past) was associated parenting, nor did this association vary at different levels of maternal education. Such null findings were also found for models

that included whether the mother worked full-time during the first year following the child's birth and whether she was stably or intermittently employed (either full-time, or as a separate measure, in any paid work) between the time that the child was one-year old and when parenting was measured.

An important limitation of this study aim is that it treated mothers' employment histories somewhat simplistically. Yet, mothers' employment trajectories are extraordinarily complex. For example, data from the NICHD SECCYD based on the quarterly mothers' reports between birth and 54 months revealed over 150 unique employment patterns, and this only considered labor force participation. Finding a way to accurately capture these different patterns, but also distill them into manageable measures, will be a lengthy and challenging task, but this is an important objective, given that this study aims to represent mothers' employment as a life course trajectory.

Other Limitations of the Study

In addition to the study limitations mentioned above, several other limitations must be acknowledged. First, there remain important questions that cannot and were not adequately addressed by this dissertation. One such question involves other potential moderators of the links among maternal education, parenting, and child achievement that were not considered. Foremost among these are race/ethnic differences in the effects of parental investments on children's learning. For example, a recent study by Davis-Kean and Sexton (2009) found that the effects of specific parental investment behaviors on children's achievement varied by race and ethnicity. The moderating role of race/ethnicity, however, would be better explored using data with a sample of mothers

and children that contains more racial/ethnic diversity than the SECCYD sample. This matter remains a question for future research. Other moderators include those related to children's diverging destinies, such as mothers' age at first birth.

A second important question that was not and could not be addressed by this study involved increases in maternal education since the child's birth. Unfortunately, such increases in education could not be adequately addressed because of documented problems with these reports in the SECCYD. Although some strategies for dealing with these problems were available (see Magnuson, Sexton, Davis-Kean, and Huston 2009), very few mothers in the SECCYD reported additional degree attainment. Yet, because post-fertility schooling has become an increasingly common trend (reports using data from Fragile Families revealed that nearly 40 percent of mothers' returned to school by the time their child was age five), this question is best addressed using data that has more variability in mothers' post-fertility degree attainment. This is an area of research I plan to pursue next, and in doing so, will be turning to alternative sources of data.

A third limitation was that this study provided a straightforward treatment of mothers' and fathers' wages and the contributions of such wages (depending on mothers' work or family structure type) to parenting and child achievement. Although income was rarely a significant predictor, future research must take steps toward clarifying the linkage between family income—which is another element of diverging destinies—marriage, employment, and education—and what such financial resources mean for the family processes explored in this study.

A final limitation of this study concerns selection. Certainly, there is the matter of whether more highly educated mothers possess certain characteristics that allow them to both successfully persist in the educational system and invest in their children's learning. Although this dissertation is able to incorporate several measures that may tap some dimension of these particular characteristics, for example, mental health as a proxy for overall sense of efficacy (Oyserman et al. 2002), a number of unmeasured or unobserved confounds likely remain unaccounted for. There is also the issue of selection as it pertains to mothers' marital and employment experiences. This issue becomes all the more important when one considers the possibility that selection into marriage or employment varies at different levels of the educational distribution. Accounting for such selection presents a tremendous challenge to this study. While the covariates included in this study are relevant to such selection processes, causal attributions based on the results of this dissertation study will remain limited.

Future Directions

This dissertation advances my career goal of understanding how education helps mothers promote the status attainment of their children. The findings from this dissertation help to advance this scholarly goal, but as noted, many important questions remain. One planned future study builds on the question posed by the employment piece of this dissertation—how maternal employment and education align to shape parenting and child achievement—but takes a different approach. This approach explores whether the impact of work on parenting is influenced by different *configurations* of work (e.g., part-time, nonstandard work; full-time, lower status work), and whether these

configurations are linked to women's education (Johnson, Kalil, and Dunfon 2011). I have already taken the preliminary steps in this research using data from the SECCYD, and early analytic results are available upon request. This research will also explore a broader range of parenting mechanisms, given how many of those tested here as mediators were not significant.

An additional future direction involves combining the second and third study aims. Given the goal of this study and its emphasis on McLanahan's notion of diverging destinies, I must build toward considering families within all the contexts that shape parental investment. Again, this aim would be better carried out with a larger sample which would provide for larger cell sizes among the groups underrepresented in the SECCYD (e.g., women who are unmarried at the time of the focal child's birth).

Another future direction involves the question of whether increases in mothers' post-fertility schooling, particularly among disadvantaged women, are associated with developmental gains for their children. This research represents an important future direction because it recognizes how, increasingly, parenthood and union formation often precede the completion of formal schooling, and as a result, educational credentials are acquired discontinuously. Of course, whether post-fertility education yields similar returns for women and their children as pre-fertility education remains unknown. In this way, such future research will tackle important questions of selection while speaking to a policy relevant issue. This study will also provide an alternative view point to my current research, which in many ways, emphasizes the returns to education among more

advantaged women. Instead, this future study will focus on the returns to schooling among more disadvantaged women.

Finally, one question that has not been completely addressed is this dissertation, or in the discussion of limitations, is why the basic linkages among women's life course pathways, parenting, and child outcomes that were explored might exist in the first place. Indeed, all three aims require increased attention to the mechanisms underlying maternal education differences in parenting, how education influences these parenting behaviors, and how education influences parenting within different contexts. This type of research, however, presents the greatest challenge of all, and would require an innovative, mixed-methods design that integrates original survey questionnaires with qualitative methods of data collection that follow a diverse sample of mothers through the educational system and into their marital and employment pathways. Yet, it is this very research that answers the most interesting and least understood questions. Thus, while I do not have concrete plans for how I might go about tackling this question, it represents a future direction to which I will continue to aim.

Summary and Broader Implications of Dissertation

In sum, the findings presented in this dissertation boil down to three key findings. First, education is strongly associated with the range of parental investment behaviors that promote children's learning. Second, education substituted for a lack of resources associated with family structure instability, non two-biological parent married households, low-status work and full-time work, and buffered against any disruptions associated with such family structure and work circumstances. Third, education

minimized the positive significance of part-time work and high prestige work and marriage to the biological father, which, among less educated women, helped narrow socioeconomic differences in parental investment and children's early achievement. Fourth, these processes had the greatest implications for the mothers' parenting during the period leading up to the start of formal schooling. All-in-all, these findings represent the first steps toward my goal of building a body of work that provides a more refined and contemporary understanding of how advantage is transmitted from one generation to the next.

However, they also represent a step toward developing a body of work that has implications for public policy. First, by focusing on the early stages of children's development, this research hones in on a time when socioeconomic disparities in children's learning begin to diverge (Alexander and Entwisle 1988), but also a time when investments in children and families can potentially have the greatest long-run implications for reducing inequality in the next generation (Cuhna and Heckman 2006, 2007). As such, this research speaks to an approach to policy that is gaining traction (early investments in children) and finding favor among the public and policy makers.

Secondly, this dissertation spotlights the importance of human capital investments, particularly among women—a debate that has reawakened over the past few years but is not the public policy priority that it is in other countries. Yet increasingly, scholars, particularly in the field of public health, are emphasizing the importance of educational investments for narrowing socioeconomic disparities in individual health, an emphasis that comes, in part, from the fact that the returns to education are life-long. In

the case of children and families, these returns can be exceptionally pervasive and have the potential to reduce socioeconomic inequality for both them and for their children. This research aims to provide insights for policy makers evaluating the relative importance of human capital investments compared to other approaches to reducing socioeconomic disparities in children achievement and wellbeing overall. Although this dissertation research represents only one study, and as such, carries a very soft voice, it is the first step in building a body of knowledge on the subject of women's human capital that will move me closer to reaching this policy oriented goal.

Appendix

Table A1. 54 Month Maternal Employment Predicting 54 Month and Kindergarten Parenting Measures

	B (*SE*)				
	Home Environment (HOME)	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Part-time (not-employed)	.39	.55*	.22	.03	.02
	(.08)	(.23)	(.19)	(.20)	(.14)
Full-time	.33	.20	-.08	-.72***	-.43***
	(.31)	(.20)	(.17)	(.18)	(.12)
2. Occupational Prestige Models					
High prestige (not-employed)	.04	.30	-.02	-.37+	-.19
	(.03)	(.24)	(.20)	(.21)	(.15)
Low prestige	.03	.36+	.07	-.45**	-.28*
	(.03)	(.20)	(.17)	(.18)	(.12)
3. Work Schedule Models					
Standard hours (not-employed)	.04	.34+	.08	-.25*	-.54***
	(.03)	(.19)	(.16)	(.12)	(.17)
Non-standard hours	.01	.31	-.14	-.27	.05
	(.04)	(.28)	(.24)	(.17)	(.25)

Notes: Models 1-3 estimated separately. For each model, reference group is not-working.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A2. First Grade Maternal Employment Predicting First Grade Parenting Measures

	B (*SE*)				
	Parenting Philosophy	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Part-time	.18	-.06	-.22	-.02	-.00
	(.12)	(.24)	(.20)	(.04)	(.04)
Full-time	-.13	-.08	-.32+	-.12***	-.21***
	(.11)	(.21)	(.17)	(.03)	(.04)
2. Occupational Prestige Models					
High prestige	.13	.01	-.08	-.10*	-.05
	(.13)	(.24)	(.20)	(.04)	(.04)
Low prestige	-.10	-.12	-.40*	-.16***	-.10**
	(.11)	(.21)	(.17)	(.04)	(.13)
3. Work Schedule Models					
Standard hours	.03	.37+	.04	.00	.00
	(.11)	(.19)	(.16)	(.01)	(.06)
Non-standard hours	-.11	-.18	-.12	-.00	.00
	(.12)	(.28)	(.23)	(.10)	(.08)

Notes: Models 1-3 estimated separately. For each model, reference group is not-working.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A3. Long-Term Measures of Maternal Employment Predicting 54 Month and Kindergarten Parenting Measures

	B (*SE*)				
	Home Environment (HOME)	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Intermittent Employment	-.34	.02	-.08	-.73***	-.45***
	(.53)	(.22)	(.18)	(.18)	(.13)
Continuous full-time work	-.16	.03	-.33	-1.14***	-.80***
	(.48)	(.30)	(.26)	(.27)	(.18)
2. Occupational Prestige Models					
Ever high (not-employed)	.02	.40	.34	-.65*	-.42*
	(.05)	(.32)	(.26)	(.30)	(.19)
Always low	.01	.06	.15	-.46+	-.48*
	(.05)	(.35)	(.28)	(.27)	(.20)
3. Work Schedule Models					
Only standard (not-employed)	-.05	.02	.41	-.58*	-.43*
	(.50)	(.34)	(.27)	(.28)	(.19)
Non-standard hours	.03	-.15	-.08	-.74	-.53*
	(.52)	(.35)	(.28)	(.29)	(.20)
Reports of non-standard work	-.02	-.00	.06**	.05+	.02
	(.04)	(.03)	(.23)	(.03)	(.01)
4. Work First Year					
Worked within first year	.18	.25	.05	-.19	-.25*
	(.28)	(.18)	(.15)	(.16)	(.11)

Notes: Models 1-3 estimated separately. For each model, reference group is never worked.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A4. Long-Term Measures of Mothers' Employment Predicting First Grade Parenting Measures

	B (*SE*)				
	Parenting Philosophy	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Intermittent Employment	.08	.00	-.09	-.23***	-.14***
	(.12)	(.24)	(.19)	(.04)	(.04)
Continuous full-time work	-.51**	.06	-.25	-.25***	-.27***
	(.18)	(.36)	(.28)	(.06)	(.05)
2. Occupational Prestige Models					
Ever high (not-employed)	.27	.14	.17	-.17***	-.21***
	(.18)	(.39)	(.30)	(.07)	(.06)
Always low	.25	-.22	-.02	-.18***	-.15***
	(.19)	(.39)	(.31)	(.07)	(.05)
3. Work Schedule Models					
Only standard (not-employed)	.54**	.42	.17	-.15*	-.11+
	(.24)	(.40)	(.33)	(.07)	(.06)
Non-standard hours	.34+	-.02	-.16	-.28***	-.18**
	(.20)	(.41)	(.33)	(.07)	(.06)
Reports of non-standard work	.02	-.00	.03	.01*	.01
	(.04)	(.03)	(.02)	(.00)	(.00)
4. Work First Year					
Worked within first year	-.29***	.23	-.02	-.05	-.05+
	(.09)	(.18)	(.15)	(.03)	(.03)

Notes: Models 1-3 estimated separately. For each model, reference group is never worked.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A5. 54 Month Maternal Employment x Maternal Education Predicting 54 Month and Kindergarten Parenting Measures

	B (*SE*)				
	Home Environment (HOME)	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Maternal education	.47***	.22***	.16**	.08	.07+
	(.10)	(.07)	(.06)	(.06)	(.04)
Part-time	6.79**	2.14	3.03*	.82	-.09
	(2.08)	(1.37)	(1.17)	(1.21)	(.83)
Full-time	2.05	.81	.14	1.44	.16
	(1.66)	(1.08)	(.93)	(.98)	(.67)
Part-time x maternal education	-.43**	-.11	-.19*	-.06	.01
	(.14)	(.09)	(.08)	(.08)	(.06)
Full-time x maternal education	-.13	-.04	-.02	-.15*	-.04
	(.12)	(.08)	(.06)	(.07)	(.05)
2. Occupational Prestige Models					
Maternal education	.05***	.22***	.15**	.08	.07
	(.10)	(.07)	(.06)	(.06)	(.04)
High prestige	.39+	1.83	1.54	4.77***	.47
	(.24)	(1.53)	(1.32)	(1.42)	(.97)
Low prestige	.47*	.80	.62	-.27	.11
	(.19)	(1.24)	(1.07)	(1.18)	(.76)
High x maternal education	-.02	-.18	-.10	-.32***	-.04
	(.02)	(.10)	(.08)	(.10)	(.06)
Low x maternal education	-.03*	-.03	-.04	-.01	-.28
	(.01)	(.09)	(.07)	(.08)	(.61)
3. Work Schedule Models					
Maternal education	.03***	.22***	.15**	.07	.06
	(.01)	(.07)	(.06)	(.06)	(.04)
Standard hours	.04	1.28	.87	1.06	-.07
	(.03)	(1.04)	(.89)	(.95)	(.65)
Non-standard hours	.01	.23	2.13	-.62	.21
	(.04)	(1.82)	(1.56)	(1.63)	(1.08)
Standard x maternal education	.04	-.07	-.07	-.11+	-.01
	(.03)	(.07)	(.06)	(.06)	(.04)
Non-standard x maternal education	.01	.01	-.16	.05	-.04
	(.04)	(.13)	(.11)	(.12)	(.08)

Notes: Models 1-3 estimated separately. For each model, reference group is not working.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A6. First Grade Maternal Employment x Maternal Education Predicting First Grade Parenting Measures

	B (*SE*)				
	Parenting Philosophy	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Maternal education	.14***	.21**	.28***	.04**	.01
	(.04)	(.08)	(.06)	(.01)	(.01)
Part-time	.49	-.02	1.37	.09	-.24
	(.76)	(1.48)	(1.21)	(.27)	(.23)
Full-time	-.11	-.10	-.03	-.12	-.10
	(.60)	(1.73)	(.96)	(.22)	(.18)
Part-time x maternal education	-.02	-.00	-.11	-.01	-.02
	(.05)	(.10)	(.08)	(.02)	(.02)
Full-time x maternal education	-.00	.00	-.02	-.01	.00
	(.04)	(.00)	(.07)	(.02)	(.01)
2. Occupational Prestige Models					
Maternal education	.14***	.22**	.29***	.04**	.64
	(.04)	(.08)	(.06)	(.01)	(.01)
High prestige	1.19	2.45	2.94*	.38	.03
	(.79)	(1.53)	(1.24)	(.28)	(.24)
Low prestige	-.09	-1.33	-.22	-.29	-.13
	(.67)	(1.29)	(1.05)	(.24)	(.20)
High x maternal education	-.07	-.15	-.19*	-.03+	-.01
	(.05)	(.10)	(.06)	(.02)	(.01)
Low x maternal education	.00	.09	-.01	.01	.00
	(.05)	(.09)	(.08)	(.02)	(.01)
3. Work Schedule Models					
Maternal education	.11**	.22**	.30***	.05***	.01
	(.04)	(.07)	(.06)	(.01)	(.01)
Standard hours	-.32	1.42	1.63+	.30	.10
	(.55)	(1.07)	(.87)	(.20)	(.17)
Non-standard hours	-.21	-2.40	-.41	.14	.28
	(.94)	(1.81)	(1.47)	(.33)	(.28)
Standard x maternal education	.03	-.07	-.11+	-.03+	-.01
	(.04)	(.07)	(.06)	(.01)	(.01)
Non-standard x maternal education	.03	.16	.02	-.02	-.02
	(.07)	(.13)	(.11)	(.02)	(.02)

Notes: Models 1-3 estimated separately. For each model, reference group is not working.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A7. Long-Term Measures of Maternal Employment x Maternal Education Predicting 54 Month and Kindergarten Parenting Measures

	B (*SE*)				
	Home Environment (HOME)	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Maternal education	.37**	.18	.07	.10	.10*
	(.12)	(.07)	(.07)	(.07)	(.04)
Intermittent employment	-.18	.21	-.51	1.25	.79
	(1.91)	(1.29)	(1.06)	(1.08)	(.74)
Continuous full-time work	2.59	-2.10	-2.46	3.04+	1.01
	(2.81)	(1.87)	(1.54)	(1.61)	(1.09)
Intermittent x maternal education	-.01	-.01	.03	-.13+	-.08+
	(.13)	(.09)	(.07)	(.07)	(.05)
Continuous x maternal education	.20	.15	.15	-.29**	-.13
	(.19)	(.13)	(.10)	(.11)	(.07)
2. Occupational Prestige Models					
Maternal education	.47*	.13	.12	.16	.06
	(.19)	(.12)	(.10)	(.11)	(.07)
Ever high prestige	2.12	.87	1.46	3.37*	.12
	(2.98)	(1.91)	(1.57)	(1.70)	(.13)
Always low prestige	1.80	-2.80	-1.02	-1.03	-.99
	(3.39)	(2.06)	(1.57)	(1.94)	(1.22)
High x maternal education	-.16	-.02	-.07	-.26*	-.04
	(.20)	(.13)	(1.04)	(.11)	(.07)
Low x maternal education	-.15	.23	-.10	.04	.03
	(.24)	(.14)	(.12)	(.14)	(.08)
3. Work Schedule Models					
Maternal education	.49	.09	.13	.12	.07
	(.20)	(.13)	(.11)	(.11)	(.07)
Standard hours	1.69	-1.85	.33	.87	-.53
	(3.05)	(2.02)	(1.66)	(1.74)	(1.20)
Non-standard hours	3.57	-.86	.27	2.26	-.43
	(3.21)	(2.14)	(1.76)	(1.84)	(1.27)
Spells of non-standard work	-.13	.07	.11	-.08	.14
	(.31)	(.21)	(.17)	(.19)	(.20)
Standard x maternal education	-.12	.15	.01	-.10	.01
	(.31)	(.14)	(.11)	(.12)	(.08)
Ever non-standard x maternal education	-.24	.06	-.02	-.21+	-.01
	(.21)	(.14)	(.12)	(.12)	(.08)

Notes: Models 1-4 estimated separately. For models 1-3, reference group is never worked. Model 4 does not employ dummy coding. Results in box represent significant differences between the low and high prestige groups by maternal education. + $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$.

Table A7. Cont. 54 Month Maternal Employment x Maternal Education Predicting 54 Month and Kindergarten Parenting Measures

	B (*SE*)				
	Home Environment (HOME)	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
4. Work During First Year					
Maternal education	.04***	.22***	.08+	.10*	.06
	(.01)	(.06)	(.05)	(.05)	(.04)
Employment Year One	.28+	1.25	-.86	3.37***	.09
	(.15)	(.98)	(.84)	(.88)	(.60)
Employment year one x maternal education	-.02+	-.07	.06	-.25***	-.02
	(.01)	(.07)	(.06)	(.06)	(.04)

Notes: + $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A8. Long-Term Maternal Employment Measures x Maternal Education Predicting First Grade Parenting Measures

	B (*SE*)				
	Parenting Philosophy	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work Status Models					
Maternal education	.12**	.27**	.21	.02	.01
	(.04)	(.09)	(.07)	(.02)	(.01)
Intermittent employment	-.04	1.21	-.63	-.46+	-.00
	(.73)	(1.57)	(1.19)	(.26)	(.22)
Continuous full-time work	-1.65	.10	-1.72	-.49	.06
	(1.09)	(2.29)	(1.76)	(.39)	(.33)
Intermittent x maternal education	-.00	-.08	.04	.02	-.00
	(.05)	(.10)	(.08)	(.02)	(.02)
Continuous x maternal education	.08	-.00	.10	.02	-.02
	(.07)	(.15)	(.12)	(.03)	(.02)
2. Occupational Prestige Models					
Maternal education	.17*	.15	.25+	.05	.01
	(.08)	(.16)	(.13)	(.03)	(.03)
Ever high prestige	.97	-.10	.86	.07	.02
	(1.25)	(2.53)	(2.05)	(.47)	(.38)
Always low prestige	.97	-2.05	-.62	.21	-.09
	(1.34)	(2.71)	(2.19)	(.51)	(.40)
High x maternal education	.05	.02	-.05	-.02	-.01
	(.08)	(.17)	(.14)	(.03)	(.03)
Low x maternal education	-.05	.16	.05	-.03	-.01
	(.09)	(.18)	(.15)	(.03)	(.03)
3. Work Schedule Models					
Maternal education	.25	.21	.38***	.04	.01
	(.10)	(.19)	(.15)	(.03)	(.03)
Standard hours	2.86*	1.12	3.20	.01	-.13
	(1.41)	(2.96)	(2.33)	(.54)	(.43)
Non-standard hours	1.50	-.06	.51	-.22	-.26
	(1.41)	(2.95)	(2.33)	(.54)	(.43)
Spells of non-standard work	.11	-.16	.21	.04	.06*
	(.09)	(.18)	(.15)	(.03)	(.03)
Standard x maternal education	-.16+	-.05	-.20	-.01	.00
	(.09)	(.19)	(.15)	(.04)	(.03)
Ever non-standard x maternal education	-.08	.00	-.04	-.00	.01
	(.09)	(.19)	(.15)	(.04)	(.03)

Notes: Models 1-4 estimated separately. For models 1-3, reference group is never worked. Model 4 does not employ dummy coding.
+ $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

Table A8. Cont. Long-Term Maternal Employment Measures x Maternal Education Predicting First Grade Parenting Measures

	B (*SE*)				
	Parenting Philosophy	Maternal Sensitivity	Cognitive Stimulation	School Involvement (Teacher)	School Involvement (Mother)
1. Work During First Year					
Maternal education	.15***	.26***	.25***	.03**	.01
	(.03)	(.06)	(.05)	(.01)	(.01)
Employment Year One	.10	1.71+	.18	.03	.12
	(.51)	(.99)	(.81)	(.18)	(.15)
Employment year one x maternal education	-.03	-.10	-.01	-.01	-.01
	(.04)	(.07)	(.06)	(.01)	(.01)

Notes: + $p < 0.10$. *$p < 0.05$. **$p < 0.01$. *** $p < .001$

References

Alexander, Karl and Doris Entwisle. 1988. *Achievement in the First Two Years of School: Patterns and Processes*. Chicago: University of Chicago.

Alexander, Karl, Doris R. Entwisle and S. D. Bedinger. 1994. "When Expectations Work: Race and Socioeconomic Differences in School Performance." *Social Psychology Quarterly* 57: 283-299.

Allison, Paul D. 2001. *Missing Data*. Thousand Oaks, CA: Sage Publications.

Allison, Paul D. 2009. *Fixed Effects Regression Models*. Thousand Oaks, CA: Sage Publications.

Amato, Paul. R. 2005. "The Impact of Family Formation Change on the Cognitive, Social, and Emotional Well-being of the Next Generation." *The Future of Children* 15: 75-96.

Ambert, Anne-Marie. 2001. *The Effect of Children on Parents*." New York: The Hawethorne Press.

Anderson, James C., and David W. Gerbing, D. 1988. "Structural Equation Modeling in Practice: A review and Recommended Two-Step Approach." *Psychological Bulletin* 103: 411-423.

Astone, Nan M. and Sara S. McLanahan. 1994. "Family structure, Residential Mobility, and School Dropout: A Research Note." *Demography* 31, 575-584.

Attewell, Paul and David Lavin. 2007. *Passing the Torch: Does Higher Education for the Disadvantaged Pay Off Across the Generations?* New York: Russell Sage Press.

Augustine, Jennifer March and Robert Crosnoe. 2010. "Mother's Depression and

Educational Attainment and their Children's Academic Trajectories." *Journal of Health and Social Behavior* 51: 274-290.

Augustine, Jennifer March, Shannon Cavanagh, and Robert Crosnoe. 2009. "Maternal Education, Children's Early Child Care, and the Reproduction of Advantage." *Social Forces* 88: 1-30.

Avellar, Sarah, and Pamela Smock. 2005. "The Economic Consequences of the Dissolution of Cohabiting Unions." *Journal of Marriage and Family* 67: 315-327.

Baker, David P. and David L. Stevenson. 1986. "Mothers' Strategies for Children's Achievement: Managing the Transition to High School." *Sociology of Education* 59: 156-166.

Bandura, Albert. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory.* Englewood Cliffs, NJ: Prentice-Hall.

Baum, Charles. 2003. "Does Early Maternal Employment Harm Child Development? An Analysis of the Potential Benefits of Leave Taking." *Journal of Labor Economics* 21: 409-448.

Beck, Audrey N., Carey E. Cooper, Sara S. McLanahan, and Jeanne Brooks-Gunn. 2010. "Partnership Transitions and Maternal Parenting." *Journal of Marriage and Family 72:* 219-233.

Behrman, Jere. R. and Mark R. Rosenzweig. "Does Increasing Women's Schooling Raise the Schooling of the Next Generation?" *The American Economic Review* 92: 323-334.

Beller, Emily. 2009. “Bringing Intergenerational Social Mobility Research into the Twenty-first Century: Why Mothers Matter.” *American Sociological Review* 74: 507-528.

Bengtson Vern L., and Katherine R. Allen. 1993. “The Life Course Perspective Applied to Families Over Time.” *Sourcebook of Family Theories and Methods* VI: 469-504.

Black, Sandra, Paul J. Devereux, and Kjell G. Salvances. 2005. “Why the Apple Doesn’t Fall Far: Understanding Intergenerational Transmission of Human Capital.” *The American Economic Review* 95: 437-449.

Blair, Sampson Lee and Daniel T. Lichter. 1991. “Measuring the Division of Household Labor: Gender Segregation of Housework Among American Couples.” *Journal of Family Issues* 12: 91-113.

Blau, Francine D., and Adam J. Grossberg. 1992. “Maternal Labor Supply and Children’s Cognitive Development.” *The Review of Economics and Statistics* 74: 474-481.

Blau, Peter M. and Otis Dudley Duncan. 1967. *The American Occupational Structure.* New York: Wiley.

Bodovski, Katerina and George Farkas. 2008. “Concerted cultivation and Unequal Achievement in Elementary School.” *Social Science Research* 27: 903-919.

Bollen, Kenneth A. 1989. *Structural Equations with Latent Variables*. Wiley Series in Probability and Mathematical Statistics. New York: Wiley.

Bollen, Kenneth A. and Patrick J. Curran. 2005. *Latent Curve Models: A Structural Equation Approach.* New York: Wiley

Bornstein, Marc and Robert Bradley. 2003. *Socioeconomic Status, Parenting, and Child Development*. Mahwah, NJ: Lawrence Erlbaum.

Bornstein, Marc, Chun-Shin Hahn, Joan T. D. Suwalsky, and O. Maurice Haynes. 2003. "Socioeconomic Status, Parenting, and Child Development: The Hollingshead Four-Factor Index of Social Status and the Socioeconomic Index of Occupations." Pp. 29-106 in *Socioeconomic Status, Parenting, and Child Development*., edited by M. Bornstein and R. Bradley. Mahwah, NJ: Lawrence Erlbaum.

Brooks-Gunn, Jeanne, Wei-Jui Han, and Jane Waldfogel. 2003. "Maternal Employment and Child Cognitive Outcomes in the First Three Years of Life: The NICHD Study of Early Child Care." *Child Development* 73: 1052-1072.

Brooks-Gunn, Jeanne, Wei-Jui Han, and Jane Waldfogel. 2010. "First-Year Maternal Employment and Child Development in the First Seven Years." *Monographs of the Society for Research in Child Development 75*: 1-147.

Buchman, Claudia, and Thomas A. DiPrete. 2006. "The Growing Female Advantage in College Completion: The Role of Family Background and Academic Achievement." *American Sociological Review* 21: 515-541.

Carniero, Pedro, Costas Meghir, and Matthias Parley. 2007. "Maternal Education, Home Environments and the Development of Children and Adolescents." IZA discussion paper No. 3072.

Cavanagh, Shannon and Aletha Huston. 2006. "Family Instability and Children's Early Problem Behavior." *Social Forces* 85: 575-605.

Cavanagh, Shannon and Aletha Huston. 2008. “The Timing of Family Instability and Children’s Social Development.” *Journal of Marriage and Family 70:* 1258-1270.

Cavanagh, Shannon, Kathryn Schiller, and Catherine Riegle-Crumb. 2006. “Marital Transitions, Parenting, and Schooling. The Link Between Family-Structure History and Adolescent’s Academic Status.” *Sociology of Education* 79: 329-354.

Cheadle, Jacob E. 2008. “Educational Investment, Family Context, and Children’s Math and Reading Growth from Kindergarten through the Third Grade.” *Sociology of Education* 81: 1-31.

Cohany, Sharon and Emily Sok. 1998. “Trends in Labor Force Participation of Married Mothers with Infants.” *Monthly Labor Review*. February: 1-15.

Cohen, Philip N. and Suzanne M. Bianchi. 1999. "Marriage, Children, and Women's Employment: What Do We Know?" *Monthly Labor Review* 122: 22-31.

Coleman, James. 1988. “Social Capital and the Creation of Human Capital.” *American Journal of Sociology* 94: 95-120.

Collins, W. Andrew, Eleanor Maccoby, Laurence Steinberg, E. Mavis Hetherington, and Marc. Bornstein. 2000. “Contemporary Research on Parenting: The Case for Nature and Nurture.” 2000. *American Psychologist* 55: 218-232.

Cooper, Carey E. and Robert Crosnoe. 2007. “The Engagement in Schooling of Economically Disadvantaged Parents and Children.” *Youth and Society* 38: 372-391.

Cooper, Carey, Sara McLanahan, Sarah Meadows, and Jeanne Brooks-Gunn. 2009. “Family Structure Transitions and Maternal Parenting Stress.” *Journal of Marriage and Family* 71: 558-574.

Crosnoe, Robert, Jennifer March Augustine, and Aletha Huston. 2009. "Children's Early Child Care and Mothers' Later Involvement with School."

Cuhna, Flavio and James Heckman. 2006. "Formulating, Identifying, and Estimating the Technology of Cognitive and Noncognitive Skill Formation." *Journal of Human Resources* 43: 738-779.

Cunha, Flavio and James Heckman. 2007. "The Technology of Skill Formation." *The Economics of Human Development* 97: 31-47.

Davis, Kelly D., W. Benjamin Goodman, Amy E. Pirretti, and David M. Almeida. 2008. "Nonstandard Work Schedules, Perceived Family Well-being, and Daily Stressors." *Journal of Marriage and Family 70*: 991–1003.

Davis-Kean, Pamela. 2005. "The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parent Expectations and the Home Environment." *Journal of Family Psychology* 19: 294-304.

Davis-Kean, Pamela and Holly R. Sexton. 2009. "Race Differences in Parental Influences on Child Development: Multiple Pathways to Success." *Merrill-Palmer Quarterly* 55: 285-318.

Desimone, Laura. 1999. "Linking Parental Involvement with Student Achievement: Do Income and Race Matter? *The Journal of Educational Research* 93: 111-130.

DiPrete, Thomas and Greg Eirich. 2006. "Cumulative Advantage as a Mechanism for Inequality: A Review of Theory and Evidence" *Annual Review of Sociology* 32: 271-297.

Downey, Douglas B., Paul T. von Hippel, and Beckett A. Broh. 2004. "Are Schools the Great Equalizer? Cognitive Inequality during the Summer Months and the School Year." *American Sociological Review* 69: 613-635

Dubow, Eric, Paul Boxer, and L. Rowell Huessman. 2009. "Long-Term Effects of Parents' Educational and Occupational Success." *Merrill-Palmer Quarterly* 53: 224-249.

Duncan, Greg J. and Jeanne Brooks-Gunn. 1997. *Consequences of Growing up Poor.* New York: Russell Sage Foundation.

Duncan, Greg J., Jeanne Brooks-Gunn, W. Jean Yeaung, and Judith R. Smith, J. R. 1998. "How Much Does Childhood Poverty Affect the Life Chances of Children?" *America Sociological Review* 63: 406-423.

Duncan, Greg J., Katherine Magnuson, Jens Ludwig. 2004. "The Endogeneity Problem in Developmental Studies." *Research in Human Development 1*: 59-80.

Elder, Glen. 1998. "The Life Course as Developmental Theory." *Child Development* 69: 1-12.

Edin, Kathryn and Laura Lein. 1997. *Making Ends Meet: How Single Mothers Survive Welfare and Low-Wage Work.* New York, NY: Russell Sage Foundation.

Entwisle, Doris and Karl L. Alexander. 1993. "Entry into School: The Beginning School Transition and Educational Stratification in the United States." *Annual Review of Sociology* 19: 401-423.

Entwisle. Doris and Karl L. Alexander. 1996. "Family Type and Children's Growth in Reading and Math over the Primary Grades." *Journal of Marriage and the Family* 58: 341-355.

Entwisle, Doris R., Karl L. Alexander, and Linda S. Olson. 1997. *Children, Schools, and Inequality*. Boulder, CO: Westview.

England, Paula, Carmen Garcia-Beaulieu, and Mary Ross. 2004. "Women's Employment Among Blacks, Whites, and Three Groups of Latinas: Do More Privileged Women Have Higher Employment?" *Gender & Society* 18: 494-509.

Epps, Syliva and Aletha Huston. 2007. "Effects of a Poverty Intervention Policy Demonstration on Parenting and Child Behavior: A Test of the Direction of Effects." *Social Science Quarterly* 88: 344-365.

Featherman, David and Robert Hauser. 1978. *Opportunity and Change*. New York: Academic Press.

Foster, E. Michael. 2002. "How Economists Think about Family Resources and Child Development." *Child Development* 73: 1094-1914.

Frank, Kenneth A. 2000. "Impact of a Confounding Variable on a Regression Equation." *Sociological Methods and Research* 29: 147-194.

Frank, Kenneth A. and Kyung-Seok Min. 2007. "Indices of Robustness for Sample Representativeness." *Sociological Methodology 37*: 349-392.

Freeman, Catherine. 2004. "Trends in Educational Equity of Girls and Women: 2004." National Center for Educational Statistic, U.S. Department of Education.

Genettian, Lisa A., Katherine Magnuson, and Pamela Morris. 2008. “From Statistical Associations to Causation: What Developmentalists Can Learn From Instrumental Variables Techniques Couples with Experimental Data.” *Developmental Psychology* 44: 381-394.

Glazerman, Stepehn, Dan Levy, D. and David Myers. 2003. “Nonexperimental Versus Experimental Estimates of Earnings Impacts.” *Annals of the American Academy of Political and Social Science* Online 589: 63-85.

Glenn, Norval "Quantitative Research on Marital Quality in the 1980s: A Critical Review." *Journal of Marriage and the Family,* 52: 818-831.

Gordon, Nancy, Paul D. Cleary, Claire E. Parker, and Charles Czeisler. 1986. “The Prevalence and Health Impact of Shiftwork.” *American Journal of Public Health 76*: 1225-1228.

Grolnick, Wendy S., Richard M. Ryan, and Edward L. Deci. 1991. “Inner Resources for School Achievement: Motivational Mediators of Children’s Perceptions of Their Parents.” *Journal of Educational Psychology* 83: 508-517.

Hamre, Bridgette and Robert C. Pianta. 2005. “Can Instructional and Emotional Support in the First-Grade Classroom Make a Difference for Children at Risk of School Failure?” *Child Development* 76: 949-967.

Han, Wen-Jui. 2006. “Maternal Work Schedules and Child Outcomes: Evidence from the National Survey of American Families.” *Children and Youth Services Review 28*: 1039-1059.

Han, Wen-Jui. 2005. “Maternal Nonstandard Work Schedules and Child Cognitive Outcomes.” *Child Development 76*: 137-154.

Han, Wen-Jui, Jane Waldfogel, and Jeanne Brooks-Gunn. 2001. “The Effects of Early Maternal Employment on Children"s Later Cognitive and Behavioral Outcomes.” *The Journal of Marriage and the Family* 63: 336-354.

Hao, Lingxin. 1996. “Family Structure, Private Transfer, and the Economic Well-Being of Families with Children.” *Social Forces* 75: 269-292.

Hart, Betty and Todd Risley. 1995. *Meaningful Differences in the Everyday Experiences of Young American Children*. Baltimore: Paul H. Brooks Publishing Co.

Haveman, Robert and Barbara Wolfe. 1995. The Determinants of Children’s Attainments: A Review of Methods and Findings. *Journal of Economic Literature* 33*:* 1829–1878.

Hetherington, E. Mavis. 1989. “Coping with Family Transitions: Winners, Losers, and Survivors Coping with Family Transitions: Winners, Losers, and Survivors.” *Child Development* 60: 1-14.

Hill, Nancy, Domini Castellino, Jennifer E. Lansford, Patrick Nowlin, Kenneth A. Dodge, John E. Bates, and Gregory S. Petit. 2004. “Parent Academic Involvement as Related to School Behavior, Achievement, and Aspirations: Demographic Variations across Adolescence.” *Child Development* 75: 1491-1509.

Hoff-Ginsberg, Erika and Twila Tardif. 1995. “Socioeconomic Status and Parenting. Pp. 161-187 in *Handbook of Parenting: Vol. 2. Biology and Ecology of Parenting.* Edited by M. H. Bornstein. Mahwah, NJ: Lawrence Erlbaum.

Hoover-Dempsey, Kathleen and Howard M. Sandler. 1997. "Why Do Parents Become Involved in Their Children's Education?" *Review of Educational Research* 67: 3-42.

Hoover-Dempsey, Joan T. Walker, Howard M. Sandler, Darlene Whetsel, Christa L. Green, Andrew S. Wilkins, and Kristen Closson. 2005. "Why Do Parents Become Involved? Research Findings and Implications." *The Elementary School Journal* 106: 105-130.

Horvat, Erin McNamara, Elliot Weininger, and Annette Lareau. 2003. "From Social Ties to Social Capital: Class Differences in the Relations between Schools and Parent Networks." *American Educational Research Journal* 40: 319-351. 2003.

Houtenville, Andrew J., and Karen Smith Conway. 2008. "Parental Effort, School Resources, and Student Achievement." *Journal of Human Resources* 43: 437–453.

Huston, Aletha and Stacy Rosenkrantz Aronson. 2005. "Mothers' Time with Infant and Time in Employment as Predictors of Mother-Child Relationships and Children's Early Development." *Child Development* 76: 467-482.

Hynes, Katherine and Marin Clarkberg. 2005. "Women's Employment Patterns during Early Parenthood: A Group-Based Trajectory Analysis." *Journal of Marriage and Family* 67: 222-239.

Isen, Adam Betsey Stevenson, 2008. "Women's Education and Family Behavior: Trends in Marriage, Divorce and Fertility," NBER Chapters, in: Topics in Demography and the Economy National Bureau of Economic Research, Inc.

Joshni, Pamela and Karen Bogen. 2007. "Nonstandard Schedules and Young Children's Behavioral Outcomes among Working Low-Income Families." *Journal of Marriage and Family 69*: 139-156.

Juhn, Chinhui and Kevin Murphy. 1997. "Wage Inequality and Family Labor Supply," *Journal of Labor Economics*, 15.

Kalil, Arile, Rebecca Ryan, and M. Corey. 2011. Diverging Destinies: Maternal Education and Investments in Children. *Unpublished manuscript.*

Kalmijn, Matthijs. 1994. "Mother's Occupational Status and Children's Schooling." *American Sociological Review* 59: 257-75.

Kingston, Paul W., Ryan Hubbard, Brent Lapp, Paul Schroeder, and Julia Wilson. 2003. "Why Education Matters." *Sociology of Education* 76: 53-70.

Kohl, Gwynne O., Liliana Lengua, Robert McMahon, and Conduct Problems Prevention Research Group. 2000. Parent Involvement in School: Conceptualizing Multiple Dimensions and Their Relations with Family and Demographic Risk Factors. *Journal of School Psychology* 38: 501-523.

Kohn, Melvin L. 1977. *Class and Conformity*: *A Study in Values Chicago*. 2nd ed. University of Chicago Press.

Kohn, Melvin L. and Carmi Schooler. 1982. "Job Conditions and Personality: A Longitudinal Assessment of Their Reciprocal Effects." *American Journal of Sociology* 87: 1257-86.

Kowaleski-Jones, Lori and Greg J. Duncan. 1999. "The Structure of Achievement and Behavior across Middle Childhood." *Child Development 70*: 930-943.

Lareau, Annette. 1989. *Home Advantage: Social Class and Parental Intervention in Elementary Education.* New York: The Falmer Press.

Lareau, Annette. 2004. *Unequal Childhoods*: *Class, Race, and Family Life*. University of California Press.

Lee, Jung-Sook and Natasha K. Bowen. 2006. "Parental Involvement, Cultural Capital, and the Achievement Gap among Elementary School Children." *American Educational Research Journal* 43: 193-218.

MacKinnon, David P., Amanda J. Fairchild, and Matthew S. Fritz. 2007. Mediation Analysis. *Annual Review of Psychology, 58*: 593 -614.

Magnuson, Katherine. 2007. "Maternal Education and Children's Academic Achievement During Middle Childhood." *Developmental Psychology* 43: 1497-1512.

Magnuson, Katherine and Lawrence M. Berger. 2009. "Family Structure States and Transitions: Associations with Children's Well-Being During Middle Childhood." *Journal of Marriage and Family* 71: 575-591.

Magnuson, Katherine, Holly R. Sexton, Pamela Davis-Kean, and Aletha C. Huston. 2009. "Increases in Maternal Education and Young Children's Language Skills." *Merrill-Palmer Quarterly* 55: 319-350.

Martin, Steven. "Trends in marital dissolution by women's education in the United States." *Demographic Research,* 2006: 537-560.

Mayer, Susan. 1997. *What Money Can't Buy: Family Income and Children's Life Chances.* Cambridge: Harvard University Press.

McCartney, Kathleen, Margaret Burchinal, and Kristin Bub, K. 2006. "Best Practices in Quantitative Methods for Developmentalists." *Monographs of the Society for Research in Child Development, 71*: 1-172.

McLanahan, Sara S. 2004. "Diverging Destinies: How Children are Faring under the Second Demographic Transition." *Demography* 41: 607-627.

McLanahan, Sara S. and Gary Sandefur. 1994. *Growing up with a Single Parent: What Helps, What Hurts*. Cambridge, MA: Harvard University Press.

McLoyd, Vonnie. 1990. "The Impact of Economic Hardship on Black Families and Children: Psychological Distress, Parenting, and Socioemotional Development." *Child Development* 61: 311-346

McLoyd, Vonnie. 1998. "Socioeconomic Disadvantage and Child Development." *American Psychologist* 53: 185-204.

McNeal, Ralph B. 1999. "Parental Involvement as Social Capital: Differential Effectiveness on Science Achievement, Truancy, and Dropping Out." *Social Forces* 78: 117-144.

Meadows, Sarah O., Sara S. McLanahan, and Jeanne Brooks-Gunn. 2008. "Stability and Change in Family Structure and Maternal Health Trajectories." *American Sociological Review* 73: 314-334.

Menaghan, Elizabeth G. 1997. "The Intergenerational Consequences of Social Stressors: Effects of Occupational and Family Conditions on Young Mothers and their Children." Pp. 114-132 in *Stress and Adversity over the Life Course: Trajectories and Turning Points*, ed. by Ian Gotlib and Blair Wheaton. New York: Cambridge University Press.

Menaghan, Elizabeth G., and Toby L. Parcel 1995. "Social Sources of Change in Children's Home Environments: Effects of Parental Occupational Experiences and Family Conditions over Time." *Journal of Marriage and the Family* 57: 69-84.

Mirowsky, John, and Catherine E. Ross. 2003. *Education, Social Status, and Health*. Aldine de Gruyter.Mirowsky, John, and Catherine E. Ross. 2007.

Mirowsky, John, and Catherine E. Ross. 2007. "Life Course Trajectories of Perceived Control and their Relationship to Education." *American Journal of Sociology*, 112: 1339-82.

Muller, Chandra. 1995. "Maternal Employment, Parent Involvement, and Mathematics Achievement among Adolescents." *Journal of Marriage and the Family* 57: 85-100.

Muthen, Linda K. and Bengt O. Muthen. 2004. *Mplus User's Guide*. Los Angeles: Authors.

Neiss, Michelle and David C. Rowe. 2000. "Parental Education and Children's Verbal IQ in Adoptive and Biological Families in the National Longitudinal Study of Adolescent Health." *Behavior Genetics* 30: 487-495.

Nevill, Stephanie C., and Xianglei Chen. 2007. “The Path through Graduate School: A Longitudinal Examination 10 Years after Bachelor’s Degree (NCES 2007-162).” Washington, DC: National Center for Education Statistics.

NICHD Early Child Care Research Network. 2005. *Child Care and Child Development*: *Results from the NICHD’s Study of Early Child Care and Youth Development*. New York: Guilford Press.

Nomaguchi, Kei M. 2006. “Maternal Employment, Nonparental Care, Mother-Child Interactions, and Child Outcomes during Preschool Years.” *Journal of Marriage and Family* 68: 1341-1369.

Okagaki, Lynn and Robert J. Sternberg. 1993. “Parental Beliefs and Children's Early School Performance.” *Child Development* 64: 36-56.

Oppenheimer, Valerie-Kincade. “A Theory of Marriage Timing.” *American Journal of Sociology* 94: 563-591.

Oreopoulos, Philip, Marianne E. Page, and Ann Huff Stevens. 2006. “The Intergenerational Effects of Compulsory Schooling.” *Journal of Labor Economics* 24: 729-760.

Oreopoulos, Philip and Kjell Salvanes. 2009. “How Large are Returns to Schooling? Hint: Money Isn’t Everything.” NBER Working Paper Series 15339.

Oropesa, R.S., Nancy S. Landale, and Tanya Kenkre. 2003. "Income Allocation in Marital and Cohabiting Unions: The Case of Mainland Puerto Ricans." *Journal of Marriage and Family* 65: 910-926.

Osborne, Cynthia and, Sara S. McLanahan. 2007. Partnership Instability and Child Wellbeing. *Journal of Marriage and Family 69*: 1065-1083.

Oyserman, Daphna, Deborah Bybee, Carol Mowbray, and Peter MacFarlane. 2002. "Positive Parenting among African American Mothers with a Serious Mental Illness." *Journal of Marriage and Family* 64: 65-77.

Parcel, Toby L., and Elizabeth G. Menaghan. 1990. "Maternal Working Conditions and Children's Verbal Facility: Studying the Intergenerational Transmission of Inequality from Mothers to Young Children." *Social Psychology Quarterly* 54: 132-147.

Parcel, Toby L. and Mikaela Dufur. 2001. "Capital at Home and at School: Effects on Student Achievement." Social Forces 77: 881-911.

Percheski, Christine. 2008. "Opting Out? Cohort Differences in Professional Women's Employment Rates from 1960-2005." *American Sociological Review* 73: 497-517.

Phillips, Meredith, James Crouse, and John Ralph. 1998. "Does the Black-White Test Gap Widen after Children enter School?" Pp. 229-272 in *The Black-White Test Score Gap*, edited by C. Jencks and M. Phillip. Washington, DC: Brookings Institution Press.

Pianta, Robert C., Martha J. Cox, and Kyle L. Snow. 2007. *School Readiness and the Transition to Kindergarten in the Era of Accountability* Baltimore: Brookes Publishing Company.

Pianta, Robert C., Jay Belsky, Renate Houts, Fred J. Morrison, and the NICHD Early Child Care Research Network. 2007. "Opportunities to Learn in America's Elementary Classrooms." *Science* 315: 1795-1796.

Plomin, Robert and Steven Petrill. 1997. "Genetics and Intelligence: What's New?" *Intelligence* 24: 53-77.

Pong, Suet-Ling. 1997. "Family Structure, School Context, and Eighth Grade Math and Reading Achievement." *Journal of Marriage and Family* 59: 734-736.

Presser, Harriet B. and Amy G. Cox. 1997. "The Work Schedules of Low-Educated American Women and Welfare Reform." *Monthly Labor Review* 120: 25-34.

Raley, R. Kelly and Larry L. Bumpass. 2003. "The Topography of the Plateau in Divorce: Levels and Trends in Union Stability after 1980." *Demographic Research* 8: 246-258.

Raver, C. Cybele. 2002. "Emotions Matter: Making the Case for the Role of Young Children's Emotional Development for Early School Readiness." *Social Policy Report* 16: 1-19.

Raver, C. Cybele. 2003. "Does Work Pay Psychologically as Well as Economically? The Role of Employment in Predicting Depressive Symptoms and Parenting among Low-Income Families." *Child Development* 74: 1720-1736.

Raver, C. Cybele, Elizabeth Gershoff, J. Lawrence Aber. 2007. Testing Equivalence of Mediating Models of Income, Parenting, and School Readiness for White, Black, and Hispanic Children in a National Sample. *Child Development* 78: 96-115.

Riegle-Crumb, Catherine. 2006 “The Path Through Math: Course-taking Trajectories and Student Performance at the Intersection of Gender and Race/Ethnicity”. *American Journal of Education* 113: 101-122.

Roeters, Anne Tanja Van Der Lippe and Esther S. Kluwer. 2010. “Work Characteristics and Parent-Child Relationship Quality: The Mediating Role of Temporal Involvement.” *Journal of Marriage and Family 72*: 1317-1328.

Rosenzweig, Mark R. and Kenneth I. Wolpin. 1994. “Parental and Public Transfers to Young Women and Their Children.” *The American Economic Review* 84: 1195-1212.

Rubin, Donald B. 1996. Multiple Imputation after 18+ Years. *Journal of the American Statistical Association* 91: 473-489.

Johnson, Rucker C., Ariel Kalil, and Rachel Dunifon. 2011. “Employment Patterns of Less-Skilled Workers: Links to Children's Behavior and Academic Progress. *Demography*.

Sacerdote, Bruce. 2004. “What Happens When we Randomly Assign Children to Families?” NBER Working Paper No. 10894.

Sayer, Liana C. 2005. “Gender, Time, and Inequality: Trends in Women’s and Men’s Paid Work, Unpaid Work, and Free Time.” *Social Forces* 84: 285-303.

Sayer, Linda, Anne Gauthier, and Frank Furstenberg. 2004. “Educational Differences in Parents’ Time with Children: Cross-National Variations.” *Journal of Marriage and Family*. 66: 1152-1169.

Schaefer, Earl S. and M. Edgerton. 1985. “Parent and Child Correlates of Parental Modernity.” In I. E. Sigel (Ed.), *Parental Belief Systems: The Psychological Consequences for Children* (pp. 287-318). Hillsdale, NJ: Erlbaum.

Schnittker, Jason. 2004. “Education and the Changing Shape of the Income Gradient in Health.” Journal of Health and Social Behavior 45:286-305.

Seltzer, Michael, Kilchan Choi, and Yeow Meng Thum. 2003. “Examining Relationships between Where Students Start and How Rapidly They Progress: Implications for Conducting Analyses That Help Illuminate the Distribution of Achievement within Schools.” *Educational Evaluation and Policy Analysis 25:* 263-286.

Sewell, William, Archibald Haller, and George Ohlendorf. 1970. “The Educational and Early Occupational Status Attainment Process: Replication and Revision.” *American Sociological Review* 35:1014-27.

Shelton, Beth Anne and Daphne John. 1996. “The Division of Household Labor.” *Annual Review of Sociology* 22: 299-322.

Sirin, Selcuk R. 2005. “Socioeconomic Status and Academic Achievement: A Meta-Analytic Review of Research.” *Review of Educational Research* 75: 417-453.

Smock, Pamela, Wendy Manning, and Sanjiv Gupta. 1999. "The Effect of Marriage and Divorce on Women's Economic Well-Being." *American Sociological Review* 64: 794-812.

Snyder, Thomas D., Sally A. Dillow, and Charlene M. Hoffman. 2006. “”Digest of Education Statistics.” National Center for Education Statistics, U.S. Department of Education.

Stevenson, David L., and David P. Baker. 1987. “The Family-School Relation and the Child’s School Performance.” *Child Development* 58: 1348-1357.

Stone, Pamela. 2007. *Opting Out: Why Women Really Quit Careers and Head Home*. Berkeley, CA: University of California Press.

Sweeney, Megan and Maria Cancian. 2004. "The Changing Importance of Economic Prospects for Assortative Mating among White Women in the United States." *Journal of Marriage and Family* 66: 1015-1028.

Taylor, Lorraine, Jennifer Clayton, and Stephanie Rowley. 2004. “Academic Socialization: Understanding Parental Influences on Children’s School-Related Development in the Early Years. *Review of General Psychology* 8: 163-178.

Useem, Elizabeth. 1992. “Middle Schools and Math Groups: Parents' Involvement in Children's Placement.” *Sociology of Education* 65: 263-97.

Vandell, Deborah L. and Janaki Ramanan. 1992. “Effects of Early and Recent Maternal Employment on Children from Low-Income Families. *Child Development* 63: 938-949.

Waldfogel, Jane, Wei-Jui Han, and Jeanne Brooks-Gunn. 2002. “The Effects of Early Maternal Employment on Child Cognitive Development. *Demography* 39: 369-392.

Willet, John B. and Aline G. Sayer. 1994. “Using Covariance Structure to Detect Correlates and Predictors of Individual Change Over Time.” *Quantitative Methods in Psychology 116*: 363-381.

Wilson, Andrea, Kim Shuey, and Glen Elder. 2007. "Cumulative Advantage Processes as Mechanisms of Inequality in Life Course Health." *American Journal of Sociology 112*: 1886-1924.

Winsler, Adam, Henry Tran, Suzanne Hartman, Amy L. Madigan, Louis Manfra, and Charles Bleiker. 2008. "School Readiness Gains Made by Ethnically Diverse Children in Poverty Attending Center-Based Childcare and Public School Pre-Kindergarten Programs." *Early Childhood Research Quarterly 23*: 314-329.

Woodcock, Richard W., Kevin McGrew, and Nancy Mather. 2001. *Woodcock-Johnson III Tests of Achievement*. Itasca, IL: Riverside Publishing.

Wu, Lawrence L. and Brian B. Martinson. 1993. "Family Structure and the Risk of a Premarital Birth." *American Sociological Review, 58*, 210-32.

Zaslow, Martha J., Katherine Tout, K., Sheila Smith, and Kristen Moore. 1998. Implications of the 1996 Welfare Legislation for Children: A Research Perspective. *Social Policy Report* 13: 1–29.

Vita

Jennifer March Augustine attended Berkeley Preparatory School in Tampa, Florida. In 2003, Jennifer received the dual degree of Bachelor of Arts in English and Bachelor in Arts in Sociology from Northwestern University in Evanston, Illinois. In August 2004, she entered the doctoral program in the Department of Sociology at the University of Texas at Austin. She received the degree of Master of Arts in Sociology from the University of Texas at Austin in August 2006.

Permanent Address: jmarch@mail.utexas.edu

This dissertation was typed by the author.